G1000
System Maintenance Manual
Hawker Beechcraft G58

Contains Instructions
For Continued Airworthiness
For STC SA01584WI-D

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CAUTION

The GDU lens is coated with a special anti-reflective coating that is very sensitive to skin oils, waxes and abrasive cleaners. CLEANERS CONTAINING AMMONIA WILL HARM THE ANTI-REFLECTIVE COATING. It is very important to clean the lens using a clean, lint-free cloth and an eyeglass lens cleaner that is specified as safe for anti-reflective coatings.

IMPORTANT

All G1000 screen shots used in this document are current at the time of publication. Screen shots are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.

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1 INTRODUCTION

1.1 CONTENT, SCOPE, PURPOSE

This document provides Instructions for Continued Airworthiness (ICA) for the Garmin G1000 integrated avionics as installed in the Hawker Beechcraft G58 as modified under STC SA01584WI-D. This document satisfies the requirements for continued airworthiness as defined by 14 CFR Part 23.1529 and Appendix G. Information in this document is required to maintain the continued airworthiness of the G1000. This document is intended to be used in conjunction with the existing Hawker Beechcraft Baron 55 and 58 Maintenance Manual and the Hawker Beechcraft Baron (Model G58) Maintenance Manual Supplement listed in Table 1.1.

1.1.1 APPLICABILITY

This document applies to all G58 aircraft that have been modified in accordance with STC SA01584WI-D. The data defining this modification is contained in the Master Drawing List 005-00606-01.

Modification of an aircraft by this Supplemental Type Certificate (STC) obligates the aircraft operator to include the maintenance information provided by this document in the operator's Aircraft Maintenance Manual and the operator's Aircraft Scheduled Maintenance Program.

1.2 ORGANIZATION

The following outline briefly describes the organization of this manual:

Section 2: System Description
Provides a complete description of the type design change associated with updating the G1000 system in the Hawker Beechcraft G58 .

Section 3: G1000 Control & Operation
Presents basic control and operation information specifically tailored to maintenance practices. Basic G1000 Configuration Mode operation is also described.

Section 4: Instructions for Continued Airworthiness
Provides maintenance instructions for continued airworthiness of the G1000 systems.

Section 5: Troubleshooting
Provides troubleshooting information to aid in diagnosing and resolving potential problems with the G1000.

Section 6: G1000 Equipment Removal & Replacement
Gives instructions for the removal and replacement of G1000 equipment associated with this modification.

Section 7: G1000 Equipment Configuration & Testing
Gives instructions for loading software, configuring, and testing of G1000 equipment.

Section 8: System Return to Service Procedure
Specifies return-to-service procedures to be performed upon completion of maintenance of the G1000 system.

1.3 DEFINITIONS/ABBREVIATIONS

AFCS: Automatic Flight Control System

CFR: Code of Federal Regulations

DME: Distance Measuring Equipment

VHF: Very High Frequency

AC: Advisory Circular

AFMS: Airplane Flight Manual Supplement

FPGA: Field Programmable Gate Array

FPM: Flight Path Marker

HSDB: High Speed Data Bus

GDU: Garmin Display Unit

GDC: Garmin Air Data Computer

GTS: Garmin Traffic System

GRT: Garmin Remote Transceiver

GTX: Garmin Transponder

GDL: Garmin Datalink

GMU: Garmin Magnetometer

GA: Garmin Antenna

GIA: Garmin Integrated Avionics

GMA: Garmin Audio Panel

GPS: Global Position System

GRS: Garmin AHRS

HSI: Horizontal Situation Indicator

LCD: Liquid Crystal Display

LRU: Line Replaceable Unit

MDL: Master Drawing List

MFD: Multi-Functional Display

PFD: Primary Flight Display

STC: Supplemental Type Certificate

SVS: Synthetic Vision System

TCAS: Traffic Collision Avoidance System

TAWS: Terrain Awareness and Warning System

WAAS: Wide Area Augmentation System

1.3.1 UNITS OF MEASURE

Unless otherwise stated, all units of measure are English units.

1.4 PUBLICATIONS

The following documents are required by this maintenance manual to perform maintenance. It is the responsibility of the owner / operator to ensure latest versions of these documents are used during operation, servicing or maintenance of the airplane.

Table 1.1 - Required Documents

P/N	Description
005-00606-12	General Arrangement, G1000 Update with Options, G58
005-W0029-00	Wiring Diagram, Optional GRT 10, Hawker Beechcraft G58 Update
005-W0030-00	Wiring Diagram, Optional GTS 820, Hawker Beechcraft G58 Update
005-00606-14	GRT 10 Equipment Install, Hawker Beechcraft G58
005-00606-15	GTS 820 Equipment Install, Hawker Beechcraft G58
005-00606-20	GTS 820 Wire Harness Installation, Hawker Beechcraft G58
005-00606-22	GRT 10 Wire Harness Installation, Hawker Beechcraft G58
320-00587-XX	Harness and Coax Fabrication, GTS 820 Option, Hawker Beechcraft G58
320-00596-XX	Harness Fabrication, GRT 10 Option, Hawker Beechcraft G58
58-590001-1C * (or subsequent revision)	Hawker Beechcraft Baron (Model G58) Maintenance Manual Supplement for Airplanes with Garmin G1000 Equipment Installed
58-590001-5B * (or subsequent revision)	Hawker Beechcraft Baron G58 Avionics Wiring Diagram Manual
55-590000-13F * (or subsequent revision)	Hawker Beechcraft Baron 55 and 58 Maintenance Manual

* Hawker Beechcraft document

The following publications are recommended to be on hand during the performance of maintenance activities.

Table 1.2 - Reference Publications

P/N	Description
190-01180-01	FAA Approved Airplane Flight Manual Supplement, G1000 Integrated Avionics Update with Options Including Synthetic Vision/Pathways on Hawker Beechcraft G58
190-00526-02	Cockpit Reference Guide for the Hawker Beechcraft G58
190-01180-00	Post Installation Checkout Procedures Hawker Beechcraft G58
190-00355-04	GDL 69/69A XM Satellite Radio Activation Instructions
190-00907-00	G1000 System Maintenance Manual
190-00587-00	GTS 8XX/GPA 65 Installation Manual

Generic installation manuals for individual Garmin LRUs are also available through the 'Dealers Only' section of the Garmin web site.

1.5 ICA REVISION AND DISTRIBUTION

This document is required for maintaining the continued airworthiness of the aircraft. When this document is revised, every page will be revised to indicate current revision level.

Garmin Dealers may obtain the latest revision of this document on the Garmin Dealer Resource Center website.

Owner/operators may obtain the latest revision of this document from the https://fly.garmin.com/ Support page, or by contacting a Garmin dealer, contacting Garmin Product Support at 913-397-8200, toll free 866-739-5687, or using around the world contact information on https://fly.garmin.com/.

A Garmin Service Bulletin describing the revision to this document will be sent to Garmin dealers if the revision is determined to be significant.

2 SYSTEM DESCRIPTION

2.1 EQUIPMENT DESCRIPTIONS

The following subparagraphs provide a brief description and picture of each Garmin LRU installed or replaced by this STC. For all other G1000/GFC 700 LRUs, refer to the Hawker Beechcraft Baron (Model G58) Maintenance Manual Supplement for Airplanes with Garmin G1000 Equipment Installed listed in Table 1.1.

2.1.1 GDU 1040 PFD & GDU 1045 MFD

One Garmin GDU 1040 display and one GDU 1045 display is installed in the Baron instrument panel. The GDU 104X units, 10.4 inch LCD displays with 1024x768 resolution, are configured as PFD and an MFD. Both displays provide control and display of nearly all functions of the G1000 integrated cockpit system. The PFD is located on the left side of the MFD.

The GDU 1045 communicates with the GDU 1040, the GDL 69A, and the GWX 68 through a high-speed data bus (HSDB) Ethernet connection. The GDU 1045 also communicates with the GDL 59 and the GTS 820 through the HSDB via the GDL 69A. The GRS 77 and GDC 74A send information to the GDU 1045 via ARINC 429 data bus. The display units communicate with each other and the GIA 63W units through a high-speed data bus (HSDB) Ethernet connection.

This STC installation approves alternate part numbers for these displays that accept external video input and have an additional HSDB Ethernet connection. There are no mechanical or electrical interface changes needed for these new part number displays. Refer to the General Arrangement Drawing 005-00606-12 listed in Table 1.1 for part number information.

NOTE

While the alternate part numbers of displays authorized by this STC include an external video input and HDSB Ethernet connection, this STC does not approve any interfaces to these ports. Any interfaces to these ports will require additional airworthiness approvals.

Figure 2.1. Display Unit

2.1.2 GTX 33 TRANSPONDER

The Garmin GTX 33 transponder communicates with the on-side GIA 63W through RS-232 digital interface. This STC provides for the optional installation of a GTX 33ES transponder that provides extended squitter functionality. The unit is mounted on the back side of the instrument panel. There are no mechanical or electrical interface changes needed GTX 33ES option and is installed in place of the existing GTX 33 if selected. Refer to the General Arrangement Drawing 005-00606-12 listed in Table 1.1 for part number information.

Figure 2.2. Transponder

2.1.3 GMU 44 MAGNETOMETER

The GMU 44 provides horizontal and vertical magnetic field information to the GRS 77 AHRS. This allows heading to be calculated and provides assistance during AHRS alignment. The GMU 44 unit is mounted in L/H wing tip. This STC approved an alternate part number of the GMU 44. There are no mechanical or electrical interface changes needed for the new magnetometer and it is installed in place of the existing part if selected. Refer to the General Arrangement Drawing 005-00606-12 listed in Table 1.1 for part number information.

Figure 2.3. Magnetometer

2.1.4 GTS 820 TRAFFIC SYSTEM

The optional GTS 820 system is designed to use active interrogations of Mode S and Mode C transponders to provide Traffic Advisories (TA) to the pilot. Passive surveillance is available only when installed with a GTX 33 with extended squitter. Traffic is displayed on the MFD via Ethernet High Speed Data Bus routed through the existing GDL 69A. The GTS receiver is installed at FS 190. It is powered from the 5 amp Traffic Alert circuit breaker fed from the 28 Vdc Avionics bus. The GPA 65 is a power amplifier / low noise amplifier (PA/LNA) module installed between the top antenna and the GTS receiver just forward of FS 140 behind the headliner.. A top GA 58 antenna is installed on the top of the aircraft just forward of FS 106.25. A lower GA 58 antenna is installed on the bottom of the aircraft between FS 131.00 and FS 151.00 (standard location) or just forward of FS 131.00 (optional location)

Figure 2.4. GTS Receiver

Figure 2.5 GPA 65 PA/LNA Module

Figure 2.6 G58 Traffic Antenna

2.1.5 XM REMOTE CONTROL SYSTEM

The optional XM remote control system consists of the GRT 10 transceiver and the GRC Remote Control. This system allows for remote control of the XM satellite radio function provided by the existing GDL 69A. The GRT 10 is installed behind the instrument panel on the top of the MFD system rack. It is powered from the existing 3 amp Datalink circuit breaker off the 28 Vdc Avionics Bus.

Figure 2.7 GRT 10 Transceiver

Figure 2.8 GRC 10 Remote Control

2.1.6 GIA 63W INTEGRATED AVIONICS UNIT (2)

Two Garmin GIA 63W Integrated Avionics Units (IAUs) contain the VHF COM/NAV receivers, WAAS GPS receiver, Flight Director, and system integration microprocessors. The GIAs also serve as a communication interface to all other G1000 LRUs in the system. Each GIA 63W communicates directly with the on-side GDU display using a HSDB Ethernet connection. Both GIAs are mounted in the systems rack behind the MFD.

GIA 1 is powered through Bus 2 and immediately powers up when the battery 1 or Battery 2 master switch is turned on. GIA #2 receives power through the Avionics Bus and powers up when the avionics master switch is turned on.

Figure 2-9 GIA unit

2.2 OPTIONAL FEATURES

The following optional features are included with this STC. These features are enabled via individual Enable cards that are to be retained with the aircraft.

- Synthetic Vision and Pathways
- TAWS-B
- Chartview

These features will need to be re-enabled after replacement of a display unit.

3 G1000 CONTROL & OPERATION

All control and operation of G1000 equipment as normally used in flight occurs through the PFD, MFD, and GMA audio panel.

3.1.1 SOFTKEYS

Some pages have commands or selections that are activated by the GDU softkeys. If a softkey is associated with a command, that command will be displayed directly above the key. A grayed-out softkey shows a command that is unavailable. A softkey that is highlighted shows the current active selection.

Figure 3.1 - G1000 Softkeys

3.1.2 FMS KNOB

The FMS knob is the primary control for the G1000 system. Operation is similar to the Garmin 400/500 Series units.

To cycle through different configuration screens:

To change page groups: Rotate the large FMS knob.

To change pages in a group: Rotate the small FMS knob.

To activate the cursor for a page, press the small FMS knob directly in, as one would push a regular button.

To cycle the cursor through different data fields, rotate the large FMS knob.

To change the contents of a highlighted data field, rotate the small FMS knob. This action either brings up an options menu for the particular field, or in some cases allows the operator to enter data for the field.

To confirm a selection, press the ENT key.

To cancel a selection, press the small FMS knob in again, deactivating the cursor. The CLR key may also be used to cancel a selection or deactivate the cursor.

3.2 G1000 NORMAL MODE

To start the G1000 system in Normal Mode:

1. With a ground power unit connected to the external power receptacle, set the L and R BAT switch to ‘ON’.
2. Set the AVIONICS MASTER switch to ‘ON’.

The G1000 system is now powered in the normal mode. In the normal operating mode, data fields that are invalid have large red X’s through them. A valid field does not display a red X. Allow the displays to initialize for approximately one minute. The PFD and MFD will function as specified in the Cockpit Reference Guide for the Hawker Beechcraft G58 when the system has been correctly installed and configured.

Figure 3.2 - Normal Mode (with SVS enabled)

Figure 3.3 - Normal Mode (without SVS enabled)

3.3 REVERSIONARY MODE

Reversionary mode allows for display of information related to safe flight in the event of a display communication or hardware failure. As installed in the G58, both manual and automatic reversionary modes are possible. Manual reversionary mode allows the operator to force the PFD or MFD into reversionary mode by pressing the large red button labeled 'DISPLAY BACKUP' on the GMA audio panel. In addition to the manual mode, the system will detect when a display failure has occurred and will put the still functioning display into reversionary mode automatically.

NOTE

When the 'DISPLAY BACKUP' button is pushed to exit reversionary mode, there is a 5-second debounce (or the GDU waits for 5 consecutive seconds) and then returns to normal mode if no other input is received. If the 'DISPLAY BACKUP' button is pushed again during this 5-second interval, the timer will repeat the count.

Figure 3.4 - Display Reversionary Mode

3.4 CONFIGURATION MODE OVERVIEW

The Configuration Mode exists to provide the avionics technician with a means of configuring, checking, and calibrating various G1000 sub-systems. Troubleshooting and diagnostics information can also be viewed in this mode.

To start the system in Configuration Mode:

a. Press and hold the ENT key on the MFD while resetting power using the MFD circuit breaker.

b. Release the ENT key after 'INITIALIZING SYSTEM' appears in the upper left corner of the MFD.

c. Press the ENT key or the YES softkey to update system files if prompted.

d. Repeat steps 1 through 3 on the PFD using the PFD circuit breaker to apply power.

CAUTION:

The Configuration Mode contains certain pages and settings that are critical to aircraft operation and safety. These pages are protected and cannot be modified, unless the technician is properly authorized and equipped. However, most protected pages are viewable to allow system awareness for troubleshooting.

NOTE

For a complete description and breakdown of each Configuration Mode page, refer to the G1000 System Maintenance Manual listed in Table 1.2.

3.5 CONFIGURATION MODE NAVIGATION

Using the FMS knob, a user can navigate through different pages and page groups in the Configuration Mode. For complete description and breakdown of each page, refer to the G1000 Line Maintenance & Configuration manual.

System Page Group		
1. System Status	6. File Manager	11. System Setup
2. Time Configuration	7. Diagnostics Terminal	12. Manifest Configuration
3. Lighting Configuration	8. OEM Diagnostics	13. Maintenance Log
4. System Audio	9. System Configuration	
5. System Upload	10. System Data Path Configuration	
GDU Page Group		
1. Serial Configuration	4. Diagnostics	7. Airframe Configuration
2. CDU Status Page	5. Ethernet Test	8. TAWS Configuration
3. Key Test	6. Alert Configuration	
GIA Page Group		
1. Serial Configuration	3. GIA I/O Configuration	5. GIA Status Page
2. GIA RS-485 Configuration	4. GIA Configuration	6. GIA CAN Configuration
GEA Page Group		
1. Engine Data	2. GEA Status Page	3. GEA Configuration
GTX Page Group		
1. Serial Configuration	2. Transponder Configuration	

GRS Page Group		
1. Inputs Configuration	2. GRS / GMU Calibration	
ADC Page Group		
1. ADC Configuration	2. GDC Configuration	
GFC Page Group		
1. GFC Configuration	2. GFC Status	
GMA Page Group		
1. GMA Configuration		
GDL Page Group		
1. GDL 69 Config		
GWX Page Group		
1. GWX Configuration		
GTS Page Group		
1. GTS Configuration		
OTHER Page Group *		
1. Stormscope		
CAL Page Group		
1. Fuel Tank Calibration	2. Flap and Trim Calibration	3. HSCM Calibration

* OTHER Page Group will not be present unless Stormscope is configured ON.

3.5.1 CONFIGURATION PROMPTS

When configuration settings are changed, the technician receives on-screen prompts and/or confirmations such as those shown in Figure 3.5. Section 7 shows other prompts encountered during the configuration process.

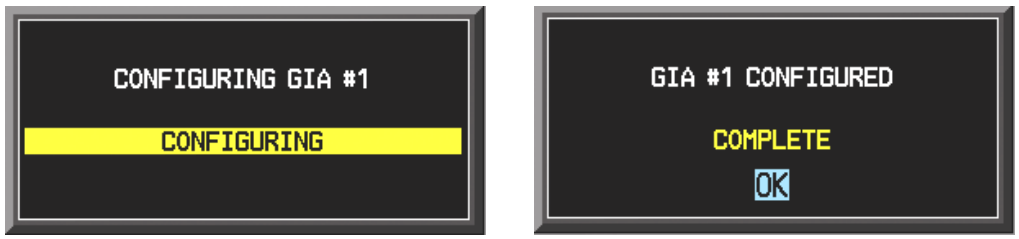


Figure 3.5, Configuration Status

3.5.2 DATA TRANSMISSION INDICATORS

Several configuration screens utilize an indicator light system to show discrete (ON/OFF) data and/or hardware component status. Unless otherwise noted, the following applies to all such status indicators:

- Green Checkmark: Expected data is successfully received and is ON. A green check could also indicate that the parameter/component is working correctly.
- Red X: Expected data is not received. A red X could also indicate that a parameter/component is invalid.
- White N/A: Expected data is OFF, or no data is expected.
- Amber ?: Data is unknown.

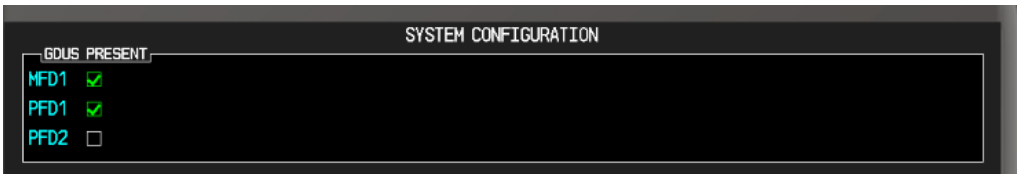


Figure 3.6, Data Transmission Indicators

3.6 G1000 SOFTWARE INFORMATION

NOTE

The following sections provide a detailed description of loading all G1000 software and configuration files, which may be excessive for individual LRU removal and replacement. If removing and replacing individual LRUs, refer to Section 5.6 of this manual for the necessary steps.

3.6.1 LOADER CARDS

NOTE

The G1000 has various features that require the use of unlock/enable cards to activate the feature. Throughout this document these cards are generically referred to as enable cards. In some cases, the actual label on the physical card may say unlock. If uncertain, the technician should verify the card part number prior to use.

Table 3.1 - Required Loader Cards

010-00725-08* or 010-00725-09	G1000/G58 Loader card (contains 006-B0857-08 Software Image) or G1000/G58 Loader card (contains 006-B0857-09 Software Image)
010-00330-43	(2 Required) Terrain/Obstacle/Airport/Supplemental Data plus Garmin Safe Taxi and NOS Flight Charts (Remains in the bottom slot of the PFD and MFD)
010-00330-50	ChartView Enable Card (see note)
010-00330-51	TAWS Enable Card (see note)
010-00330-54	SVS Enable Card (see note)

* 010-00725-08 Loader Card (006-B0857-08 Software Image) is only compatible with GIA P/N: 011-01105-01.

3.6.2 G1000 SOFTWARE IMAGE

All software and configuration files were certified by Garmin as part of the FAA-approved Type Design data. Approved software and hardware definitions are defined on the General Arrangement drawing 005-00606-12.

G1000 software and configuration files are controlled via the approved software image part number listed on the General Arrangement drawing 005-00606-12. This software image is loaded into the G1000 using a software loader card.

NOTE

Installers may obtain the G1000 software image already on a loader

card by ordering the Garmin Part Number listed in the General Arrangement Drawing 005-00606-12 referenced in Table 1.1

IMPORTANT

To satisfy the requirements of this STC it is critical that the technician install correct software image part number when servicing the G1000 system. Approved software image part numbers are defined on the General Arrangement Drawing 005-00606-12 listed in Table 1.1

CAUTION

Be cautious when using software loader cards during maintenance. The G1000 system immediately initializes the card upon power-up. On-screen prompts must be given careful attention in order to avoid potential loss of data.

3.6.3 SOFTWARE LOADER CARD CREATION

The software image is an executable self-extracting file which builds the correct file structure onto an SD card for use loading software to the G1000 and GFC700. To obtain the current file follow the procedures outlined below.

NOTE

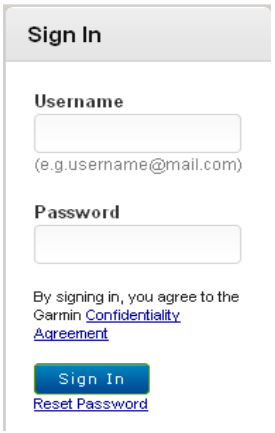
In order to create a loader card, the installer completing these procedures must be an authorized Hawker Beechcraft service center to gain access to the necessary data via the Garmin website.

NOTE

Screenshots contained in this section is dependent upon the computer being used to download the updates and its operating system.

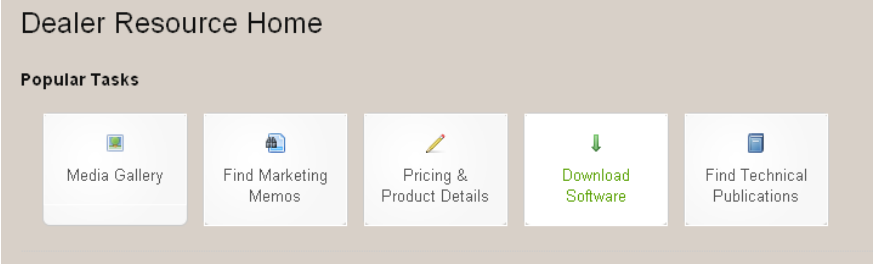
a. Go to www.garmin.com and click on the Dealer Resource Center link in the lower portion of the home page. Enter User name and Password in the Sign In area at the left of the page.

Figure 3.7 – Dealer Login



b. Click the Agree button on the confidentiality agreement page.

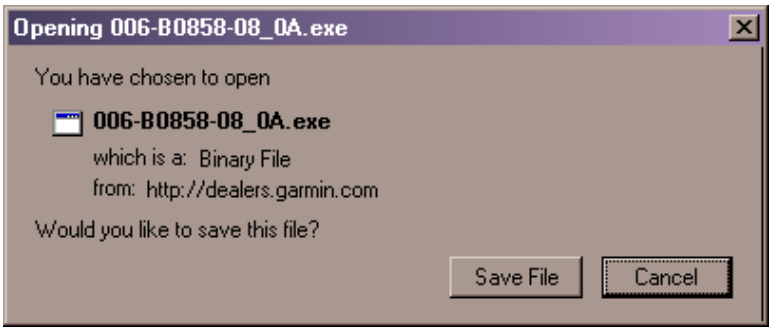
c. Select the Download Software link.



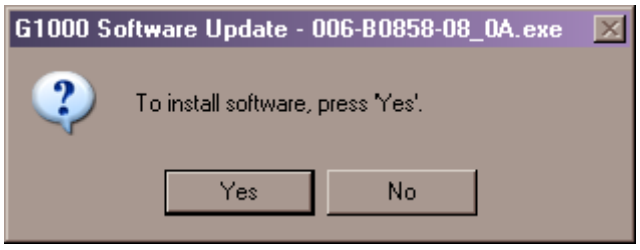
d. Select the Software Downloads hyperlink on the left hand edge of the page.

e. Scroll down until the appropriate software image is visible. Note: the software image version number will be listed in the name column. Select the appropriate software image based upon the information provided in Garmin GA Drawing 005-00606-12.

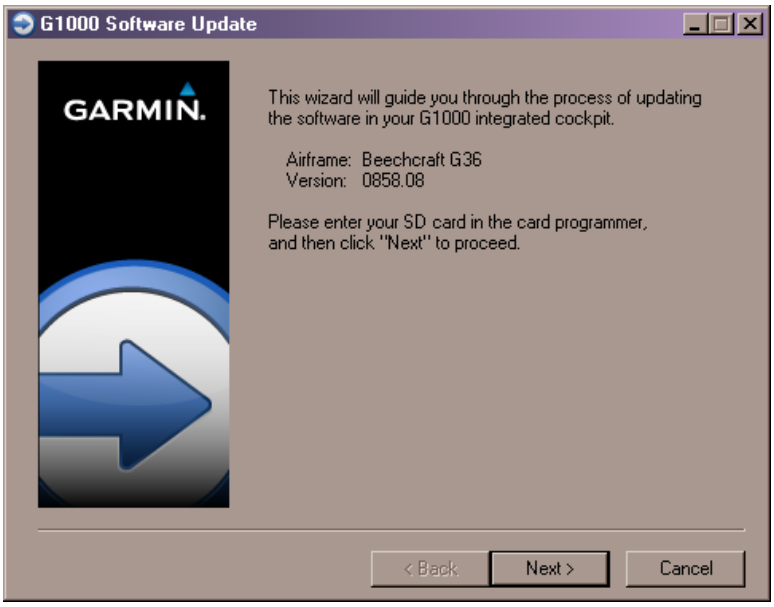
f. Select the Download hyperlink and save the file to the local hard drive. Note: part number shown below is for reference only.



g. Double-click the .exe file that was downloaded. The following window will pop-up on the screen. Click Yes.



h. Ensure that there is an empty SD card in the card reader and then click Next.


G1000 Software Update
GARMIN.
This wizard will guide you through the process of updating the software in your G1000 integrated cockpit.
Airframe: Beechcraft G36
Version: 0858.08
Please enter your SD card in the card programmer, and then click "Next" to proceed.
< Back
Next >
Cancel

NOTE

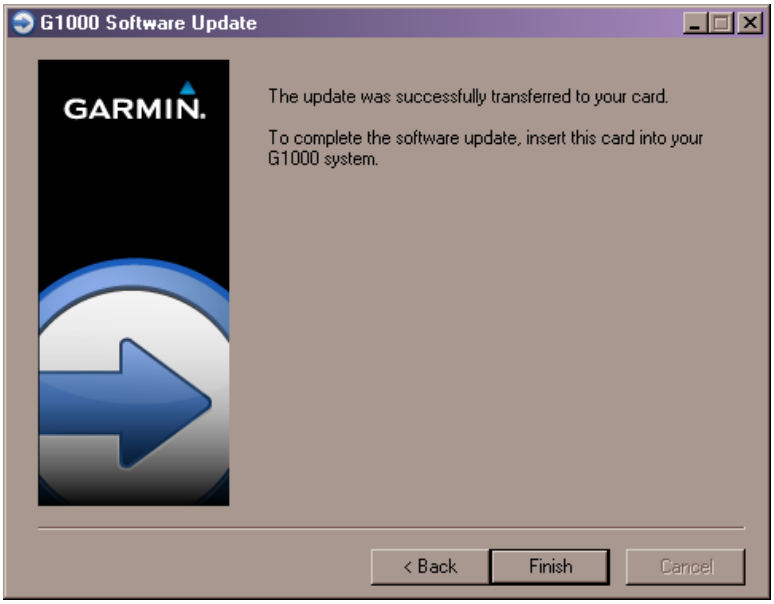
When the extraction begins, the program automatically deletes all current files on the SD card and copies the selected files to it, regardless of the file format on the SD card. Ensure files are not necessary or card is empty before proceeding

G1000 Software Update
GARMIN.
Choose the appropriate drive below and click "Next". If your drive is not listed, plug it in and click "Find Drive."
Storage Card Reader
Select the drive letter used by your storage card reader.
Memory Card (E:\)
Find Drive
< Back
Next >
Cancel

i. Ensure the card and correct drive letter is used, and click next.

A window will pop-up onto the screen to indicate file progress.

j. Once successfully completed, the following message/window will pop-up. Click Finish to finalize SD card.


G1000 Software Update
GARMIN.
The update was successfully transferred to your card.
To complete the software update, insert this card into your G1000 system.
< Back
Finish
Cancel

3.6.4 SOFTWARE FILES

Software files are defined by part number and version number on the General Arrangement Drawing 005-00606-12. Each G1000 LRU reports the software version it currently contains to the user in two places.

- Normal System Mode: The AUX – SYSTEM STATUS page lists each LRU and the reported software version.

- Configuration Mode: The SYSTEM STATUS page (SYSTEM page group) reports more detailed LRU information, including software version, part number, and LRU status.

Software files are loaded to LRUs from the SYSTEM UPLOAD page in configuration mode.

3.6.5 CONFIGURATION FILE DESCRIPTIONS

There are configuration files for baseline settings and various options. Configuration files contain preset selections for input/output channels, aircraft-specific settings, and LRU-specific settings.

IMPORTANT!

Certain software and configuration files are REQUIRED to be re-loaded during maintenance that involves removal and replacement of G1000 equipment. Refer to Section 7 for re-configuration requirements for each G1000 LRU. Pay special attention to the configuration of options for the G1000.

3.7 G1000 SOFTWARE/CONFIGURATION PROCEDURE

This section summarizes the procedures required to load software and configuration files to the G1000. It is intended to work as a central guide for technicians to use while performing maintenance on the aircraft. In sections of this manual where software is required to be reloaded, these sections will make reference back to this Section for instructions. The technician should use proper judgment regarding the context of maintenance required while following this section.

The following diagram depicts an overview of the software/configuration sequence for the G1000 system. This applies mostly to a new G1000 system which has not previously been powered up and is for informative purposes only.

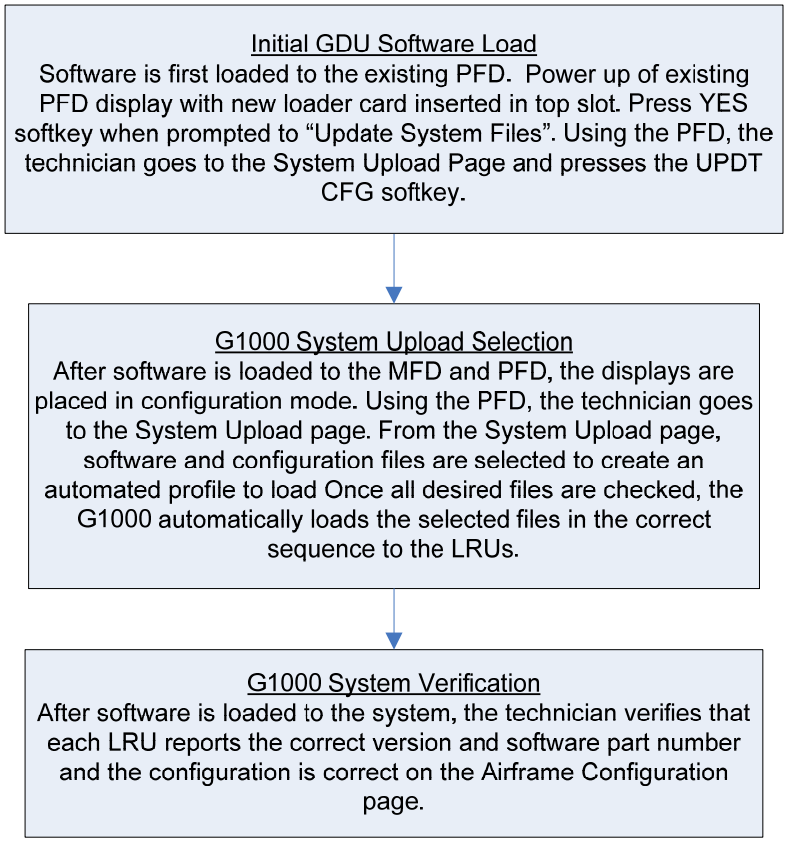

Initial GDU Software Load
Software is first loaded to the existing PFD. Power up of existing PFD display with new loader card inserted in top slot. Press YES softkey when prompted to "Update System Files". Using the PFD, the technician goes to the System Upload Page and presses the UPDT CFG softkey.
G1000 System Upload Selection
After software is loaded to the MFD and PFD, the displays are placed in configuration mode. Using the PFD, the technician goes to the System Upload page. From the System Upload page, software and configuration files are selected to create an automated profile to load Once all desired files are checked, the G1000 automatically loads the selected files in the correct sequence to the LRUs.
G1000 System Verification
After software is loaded to the system, the technician verifies that each LRU reports the correct version and software part number and the configuration is correct on the Airframe Configuration page.

Figure 3.8, Software/Configuration Overview

3.7.1 MFD & PFD SOFTWARE LOAD

IMPORTANT!

When replacing a display, it is **REQUIRED** to update the system files with the new display in the MFD slot regardless of intended final configuration, **PRIOR** to loading configuration files. Failure to do so could result in loss of any existing calibration/configuration data.

a. Apply power to the G1000 by doing the following: Connect a ground power unit to the external power receptacle, and turn on the ground power unit.

b. Turn on the L BAT MASTER, R BAT MASTER, and AVIONICS MASTER switches. At this moment, all G1000 equipment is receiving power.

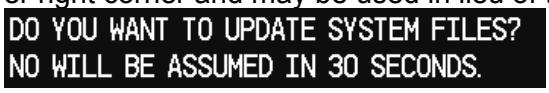
c. Pull the MFD and PFD circuit breakers.

d. Insert the loader card into the MFD top card slot.

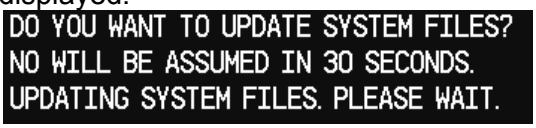
e. While holding the ENT key on MFD, restore power by closing the MFD circuit breaker.

f. When the words INITIALIZING SYSTEM appear in the upper left corner of MFD, release the MFD ENT key.

g. Press the MFD ENT key to acknowledge the following prompt (NOTE: A softkey labeled YES appears in the lower right corner and may be used in lieu of the ENT key):



h. The following screen is displayed.



i. New software is loaded to MFD. When complete, the MFD starts in configuration mode displaying the System Status page . Do not remove power.

j. Remove the loader card from MFD and insert it into the top card slot on the PFD. Repeat Steps e through h for the PFD.

k. When PFD update is complete, it starts in the configuration mode. Do not remove power. When complete, both displays should be in configuration mode, with the Loader Card remaining in the top slot of PFD.

IMPORTANT!

For the rest of the software/configuration procedure, do not operate the MFD while loading software or configuration files unless specifically instructed to do so. A failed or cancelled load may result.

l. On PFD, verify on the SYSTEM CONFIGURATION PAGE that the following LRUs are present. (status box is green, as shown below): MFD, PFD, GIA1, GIA2, GDL 69A and GWX.

m. Verify on the SYSTEM STATUS PAGE that the following are valid. (Indicated by a green checkmark within the status box, as shown above): MFD, PFD, GIA1, GIA2, GDL 69A and GWX.

n. Proceed to next section.

3.7.2 BASE CONFIGURATION AND SOFTWARE UPLOAD

a. Ensure loader card is inserted into top card slot of PFD. On PFD, select the System Upload page using the PFD small FMS knob.

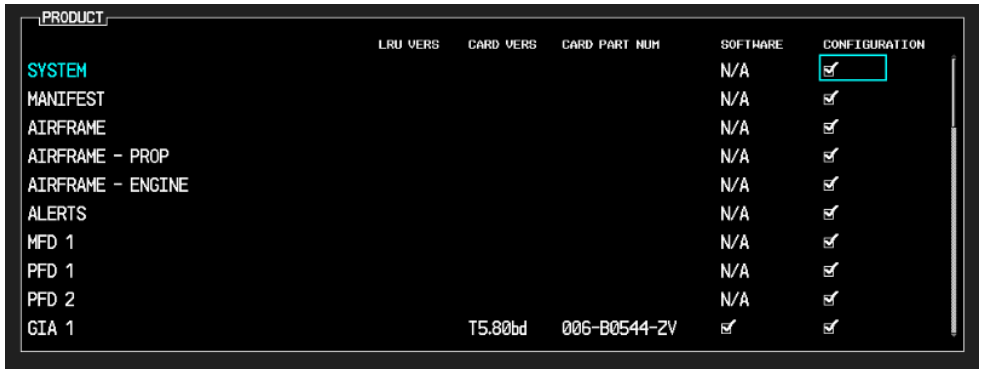
b. Activate the cursor and rotate the PFD small FMS knob to highlight BEECHCRAFT G58 in the AIRFRAME field. Press the PFD ENT key to select the configuration .

c. Once an airframe type is selected the cursor moves to the FILE window. Rotate the PFD small FMS knob to activate the drop-down menu. Move the cursor to highlight the appropriate configuration for the aircraft and press ENT on PFD.

NOTE

The PRODUCT window displays information regarding each G1000 LRU. The LRU column depicts the reported software version of the LRU, whereas the CARD VERS column shows the LRU software version stored on the Loader Card. The SOFTWARE and CONFIGURATION columns default to having all required boxes checked. Each checked file is automatically loaded to the correct G1000 LRU.

Figure 3.9 - Configuration/Software Load Page



d. Press the LOAD softkey.

e. Observe software loading progress and verify software load completes without errors as indicated by the following:

f. Green PASS or White N/A in SOFTWARE and CONFIGURATION columns.

g. Upload Complete……COMPLETE in the summary box.

h. Press PFD ENT key to acknowledge the Upload Complete box.

i. Press the UPDT CFG softkey on PFD and acknowledge prompt by pressing the ENT key on PFD.

j. Proceed to the next section.

3.7.3 OPTIONAL EQUIPMENT CONFIGURATION

Perform the following steps if any of the following options are installed:

- GTS 820
- SKY 497 Skywatch
- KN 63 DME
- WX-500 Storm Scope
- GTX 33 with extended squitter

a. Go to the System Upload page and activate cursor. Activate the drop down menu in the AIRFRAME field by rotating the small FMS knob and select G58 OPTIONS and press ENT.

b. Activate the drop down menu by rotating the small FMS knob and select the desired option, press ENT.

c. Press the LOAD softkey.

d. Observe software loading progress and verify software load completes without errors as indicated by the following:

e. Green PASS or White N/A in SOFTWARE and CONFIGURATION columns.

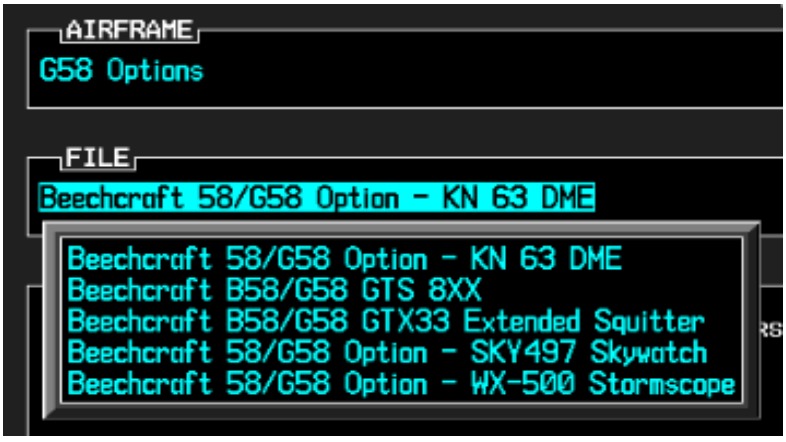
f. Upload Complete…….COMPLETE in the summary box.

g. Press PFD ENT key to acknowledge the Upload Complete box.

h. For other installed options repeat steps b thru e by rotating the large FMS knob and highlighting the File Field.

i. De-activate the cursor.

Figure 3.10 - Option Selection


AIRFRAME
G58 Options
FILE
Beechcraft 58/G58 Option - KN 63 DME
Beechcraft 58/G58 Option - KN 63 DME
Beechcraft B58/G58 GTS 8XX
Beechcraft B58/G58 GTX33 Extended Squitter
Beechcraft 58/G58 Option - SKY497 Skywatch
Beechcraft 58/G58 Option - WX-500 Stormscope

3.7.4 GRC 10 CONFIGURATION (OPTIONAL)

For installations with the optional GRT 10/GRC 10 wireless remote system, the GRC 10 must be configured to communicate with the specific GRT 10 that is installed in the aircraft. To configure the RF Pairing ID of the GRC 10:

NOTE

GRT 10 serial number is required for installation. Serial number is located on the bottom of the unit.

a. Insert two AA batteries in GRC 10.

b. On the GRC 10 press any key to power the remote.

c. When the “GRT 10 not found” message is displayed on the GRC 10, press the following buttons in order:

UP, DOWN, LEFT, RIGHT, MINUS (-), PLUS (+), PSET

d. Use the arrow buttons on the GRC 10 to enter the serial number of the GRT 10 transceiver that is installed in the aircraft. Verify that the correct GRT 10 transceiver serial number has been entered.

e. Press the XM button to store the GRT 10 serial number.

3.8 SOFTWARE LOAD CONFIRMATION

Go to the Systems Status page. Activate the cursor and toggle to the LRU window. Highlight each of the following items in the LRU window and verify that the LRU software part number and software version matches the following information.

NOTE

Verify the software and version levels for the items listed below.

a. Highlight each of the following items in the LRU window by scrolling with the small FMS knob, and verify that the software part number and version matches the information in General Arrangement, G1000 Update with Options G58, 005-00606-12 General Arrangement drawing.

SYSTEM	SW VER OK	SYSTEM	SW VER OK	SYSTEM	SW VER OK
GDC1		GIA2		GTS	
GDC1 FPGA		GIA2 AUDIO		GTS AUDIO	
GDL69		GMA1		GTS FPGA	
GEA1		GMU1		GTS MAGNETIC VA	
GFC CERT GIA1		GMU1 FPGA		GTS RGN LIST	
GFC CERT GIA2		GRS1		GTX1	
GFC CERT PC		GRS1 FPGA		MFD1	
GFC CERT PM		GRS1 MV DB		MFD1 FPGA	
GFC CERT PT C		GSA PTCH CTL		PFD1	
GFC CERT PT M		GSA PTCH MON		PFD1 FPGA	
GFC CERT RC		GSA PTCH TRM C		COM 1 *	
GFC CERT RM		GSA PTCH TRM M		COM 2 *	
GFC CERT YC		GSA ROLL CTL		NAV 1 *	
GFC CERT YM		GSA ROLL MON		NAV 1 BB *	
GIA1		GSA YAW CTL		NAV 1 FPGA *	
GIA1 AUDIO		GSA YAW MON		NAV 2 *	
NAV 2 BB *		NAV 2 FPGA *			

b. De-activate the cursor.

c. Remove loader card and power down aircraft.

IMPORTANT

If any software version and/or part number does not match, or is not successfully loaded, do not continue with post installation procedures. Troubleshoot and resolve the issue before continuing.

3.9 AVIATION DATABASE LOADING PROCEDURES

3.9.1 TERRAIN DATA CARD LOADING PROCEDURE

a. Remove power from the PFD and MFD by pulling the PFD and MFD circuit breakers.

b. Install a GDU 10XX Terrain Data Base Card 010-00330-43 in the bottom slot of the PFD and MFD.

c. This completes the installation of the Terrain Data Card.

3.9.2 AVIATION DATABASE LOADING

a. Remove power from MFD.

b. Insert an SD card containing the latest cycle Jeppesen aviation database (data supplied by Jeppesen) into the top slot of MFD.

c. Apply power to MFD. The following prompt is displayed in the upper left corner of MFD:

d. Press the MFD ENT key to confirm the database update.

e. A prompt will be displayed. Press ENT for YES.

f. After the update completes, MFD starts in normal mode.

g. Rotate FMS knob to select AUX – SYSTEM STATUS page.

h. Press the SYNC DBS softkey on the MFD.

i. Acknowledge the prompt “Enable automatic database synchronization” by pressing the ENT key on the MFD.

j. The aviation databases are now updated.

k. Confirm that the correct update cycle is loaded at the power-up page of the MFD.

3.10 SVS / PATHWAYS ACTIVATION (OPTION)

This section provides the requirements and instructions necessary to enable the G1000 Synthetic Vision / Pathways feature.

Baseline Software:

The Garmin Synthetic Vision and Pathways feature in the Hawker Beechcraft requires GDU software version 11.01 to be installed with the G58-specific software/configuration image prior to activation. See the STC Master Drawing List for specific installation requirements.

Database Cards:

The Garmin Synthetic Vision and Pathways feature requires 9 arc-second high resolution terrain databases to function.

Each G1000 display must be equipped with the P/N 010-00330-43 Terrain/Obstacle/SafeTaxi database card installed in the lower slot.

SVS / Pathways Enable Card:

The following enable card is required to activate the SVS/Pathways feature for G1000/G58 installations:

Table 3.2 – SVS Enable Card

QTY	GARMIN PART NUMBER	DESCRIPTION
1	010-00330-54	Synthetic Vision & Pathways Enable, 1 PFD

IMPORTANT!

When the SVS/Pathways option is enabled for the first time, the G1000 writes its unique system ID to the physical card and locks the files to this unique ID. This prevents the SVS/Pathways enable card from ever being used to activate the SVS/Pathway feature in other G1000 systems. This card MUST be kept with the aircraft for situations where SVS/Pathways must be re-activated.

3.10.1 SVS ACTIVATION PROCEDURE

Activate the SVS/Pathways feature by performing the following steps:

a. Apply power to the G1000 system.

b. Pull the MFD and PFD circuit breakers.

c. A special SVS Enable card is required to activate this feature, refer to Table 3.2. Insert this card in the upper slot of PFD.

d. While holding the ENT key on the PFD and MFD restore power to the displays.

e. When the words INITIALIZING SYSTEM appear in the upper left corner of the displays, release the ENT key.

f. From PFD, accomplish the following:

g. Go to the System Upload page using the small FMS knob.

- Activate the cursor. Use the small FMS knob to select CONFIGURATION FILES in the AIRFRAME field and press the ENT key.
- Highlight the FILE field. Use the small FMS knob to select the Enable SVS option and press the ENT key. Once the option is selected the configuration files in the PRODUCT field will be displayed. All files should be checked. If not, press the CHK ALL softkey.
- Press the LOAD softkey.
- Monitor the status of the upload. When the upload is finished, press the ENT key to acknowledge the upload complete confirmation.

h. View the SUMMARY field and ensure that the item is COMPLETE.

i. De-activate the cursor.

j. Power down the system and remove the SVS Enable card from the PFD.

3.11 CHARTVIEW ENABLE PROCEDURE

NOTE

- The Chart Enable card can only enable Charts on one system (one aircraft). A new Chart Enable card must be used for each aircraft.
- The required ChartView databases are subscription-based and are to be procured by the installing agency directly from Jeppesen.
- The G1000 can only be configured for FliteCharts or ChartView but not both. Performing this procedure will automatically disable the FliteChart option.

a. Apply power to the G1000 system.

b. Pull the PFD and MFD circuit breakers.

c. Insert the Chart Enable card, 010-00330-50 in the upper slot of the PFD.

d. While holding the ENT key on the PFD and MFD restore power to the displays.

e. When the words INITIALIZING SYSTEM appear in the upper left corner of the displays, release the ENT key.

f. On the PFD, go to the System Upload page.

g. Activate the cursor and rotate the small FMS knob to activate the drop down menu and select CONFIGURATION FILES in the AIRFRAME field. Press ENT.

h. Rotate the small FMS knob to activate the drop down menu and select ENABLE CHARTVIEW in the FILE field. Press ENT.

i. Verify there is a check mark in the box in the configuration column for AIRFRAME.

j. Press the LOAD softkey.

k. Monitor the status of the upload. When the upload is finished Complete and Pass is displayed. Press ENT.

l. De-activate the cursor.

m. Power down the system and remove the ChartView Enable card from the PFD.

3.12 TAWS-B ENABLE PROCEDURE

NOTE

The TAWS-B Enable card can only enable TAWS on one system (one aircraft). A new TAWS Enable card must be used for each aircraft.

a. Remove power from the MFD and PFD by pulling the PFD and MFD circuit breakers.

b. Insert the TAWS Enable card, 010-00330-51 in the upper slot of the PFD.

c. While holding the ENT key on the PFD and MFD restore power to the displays.

d. When the words INITIALIZING SYSTEM appear in the upper left corner of the displays, release the ENT key.

e. On the PFD, go to the System Upload page.

f. Activate the cursor and use the small FMS knob to activate the drop down menu and select CONFIGURATION FILES in the AIRFRAME field. Press ENT.

g. Use the small FMS knob to activate the drop down menu and select ENABLE TAWS in the FILE field. Press ENT.

h. Verify there is a check mark in the box in the configuration column for AIRFRAME.

i. Press the LOAD softkey.

j. Monitor the status of the upload. When the upload is finished, Complete and Pass is displayed. Press ENT.

k. De-activate the cursor.

l. Power down the system and remove the TAWS-B Enable card from the PFD.

3.13 AIRCRAFT REGISTRATION NUMBER ENTRY

NOTE

The large FMS knob changes Groups and the small FMS knob changes Pages within a Group.

NOTE

If aircraft has a Garmin GTS 8XX Traffic System installed, ensure GTS 8XX system configuration is loaded prior to registration entry for transponder (See Section 3.7.3).

a. Remove power (if applied) from PFD by pulling the PFD circuit breaker.

b. While holding the ENT key on the PFD, restore power by closing the PFD circuit breaker.

c. When the words INITIALIZING SYSTEM appear in the upper left corner of the PFD release the ENT key.

d. Rotate the outer FMS knob to activate the GTX group, then rotate the small FMS knob to select the TRANSPONDER CONFIGURATION page on PFD.

e. Ensure that the ADDRESS TYPE is US TAIL under the SET and XPDR ACTIVE columns.

f. Ensure that the FLIGHT ID TYPE is SAME AS TAIL under the SET and ACTIVE columns.

g. Activate the cursor and highlight the MODE S ADDRESS field. Use the small/large FMS knob to enter the aircraft registration number.

h. Once the correct registration number is entered, press the ENT key to configure the transponder.

i. Observe the status window and press the ENT key on PFD to acknowledge the OK prompt once configuration is complete.

3.14 CLEARING DEFAULT USER SETTINGS

a. Remove power from PFD and MFD.

b. While holding the CLR button on PFD, re-power PFD.

c. When prompted to clear user settings select the YES softkey.

d. Repeat steps a-c for MFD.

4 INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

4.1 AIRWORTHINESS LIMITATIONS

There are no airworthiness limitations associated with this type design change (STC # SA01584WI-D).

The previously approved Instructions for Continued Airworthiness defined under TCDS 3A16, and identified in Table 1-1, remain valid and applicable for all other maintenance and ICA aspects of the G1000 and GFC 700 systems.

The Airworthiness Limitations section is FAA-approved and specifies maintenance required under § 43.16 and 91.403 of Title 14 of the Code of Federal Regulations, unless an alternative program has been FAA-approved.

4.2 SERVICING INFORMATION

G1000 LRU maintenance is “on condition” only. No component level overhaul is required for this design change.

4.2.1 ON CONDITION SERVICING

‘On Condition’ replacement and/or servicing should occur when an item exhibits conditions, symptoms, and/or abnormalities defined in Section 5 of this manual. Replacement and/or servicing should be made only after the technician troubleshoots the system to the extent determined necessary by using the guidance in this manual along with common avionics maintenance practices.

IMPORTANT

It is impossible to provide guidance for every conceivable failure scenario within the scope of this manual. Every effort has been made to provide comprehensive guidance for possible failures. The information in this document should always be combined with common sense and a thorough knowledge of the system. Use sound avionics maintenance practices when working around or on G1000 equipment.

IMPORTANT

All structural repairs associated with this installation are to be addressed in accordance with proper Hawker Beechcraft Aircraft Company standards.

4.2.2 REQUIRED TOOLS

The following tools are needed to perform maintenance tasks on GTS 820 equipment:

- Outdoor line-of-site to GPS satellite signals or GPS indoor repeater
- TIC TR 220 Test set or equivalent
- Headset/microphone
- Ground Power Unit (Capable of supplying 28 Vdc)
- Laptop with Garmin GTS 8XX Installation software installed. The Installation software is available for download from the dealers only portion of the Garmin website (www.garmin.com)

The following tools are needed to perform maintenance tasks on GMU 44 equipment:

- #2 non-magnetic Philips screw driver

The following tools are needed to perform maintenance tasks on GTX 33ES transponder:

- Calibrated pitot/static tester
- Calibrated transponder ramp tester

The following tools are needed to perform maintenance tasks on GRT 10 equipment:

- 3/32” Hex tool
- #2 Philips screw driver

The following tools are needed to perform maintenance tasks on GDU 104X equipment:

- 3/32” Hex tool

For any other tools required to maintain the G1000 / GFC 700 refer to the existing Hawker beechcraft ICA listed in Table 1.1.

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4.3 MAINTENANCE INTERVALS

Table 4.1 below shows the systems and equipment installed by this STC that must undergo any maintenance action and identifies the timeframe in which that activity should occur.

The previously approved Instructions for Continued Airworthiness defined under TCDS 3A16, and identified in Table 1-1, remain valid and applicable for all other maintenance and ICA aspects of the G1000 and GFC 700 systems. This STC does not remove or allieviate any of the existing maintenance requirements for the Hawker Beechcraft G58 aircraft unless specifically stated.

Table 4.1 - Maintenance Intervals

Item	Description / Procedure	Section #	Interval
Visual Inspection	Complete visual inspection of new equipment and wiring	4.3.1	Annual inspection (in conjunction with existing visual inspection requirements)
Electrical Bonding tests	Conduct electrical bonding checks of new LRUs and Antenna	4.3.3	Annual inspection (in conjunction with existing visual inspection requirements)
Suspected lightning strike to GA58 antenna	Inspect antenna and surrounding structure to ensure there is no structural damage where lightning may have attached. If there is visible damage to the equipment, then it should be replaced.	6.3	On Condition
GDU 1040 PFD	Remove and Replacement	6.5	On Condition
GDU 1045 MFD	Remove and Replacement		On Condition
GMU 44 Magnetometer	Remove and Replacement	6.6	On Condition
GTS 820 Traffic receiver	Remove and Replacement	6.1	On Conditon
GPA 65 Traffic PA/LNA	Removal and Replacement	6.2	On Condition
GA 58 Antenna	Remove and Replacement	6.3	On Condition
GRT 10 XM remote control transceiver	Removal and Replacement	6.4	On Condition
GRC 10 XM remote control	Replacement / Reconfiguration	6.4.1	On Condition

Item	Description / Procedure	Section #	Interval
	Battery replacement		On Condition
Synthethic Vision /Pathways	Reactivation	3.10	On Condition / after GDU replacement
GTX 33ES Tranponder with Extended Sqitter Functionality **	Removal and Replacement	6.7	On Condition
	Transponder test (required for compliance with Title 14 of the Code of Federal Regulations (14 CFR) §§ 91.411 and 91.413)	7.1	Every 24 Calendar months

4.3.1 VISUAL INSPECTION REQUIREMENTS

In conjuction with existing Annual visual inspection requirements, conduct the following:

- Inspect all new appliances, antennas, and electrical connectors and coax connectors for corrosion or other defects.
- Check the integrity of all shield block ground attachments to the harness connector as well as integrity of the individuals shields.
- Inspect all exposed wiring for chaffing, damage, proper routing and security of attachment.
- Signs of corrosion on equipment, racks, aircraft structure relied upon for ground, and connectors, backshells, wire attachment.
- Conduct a visual inspection of the antennas and mounting. Verify there are no cracks in the antenna, no deformation in the mounting structure, and that all sealing fillets around the antennas are in good condition.
- If the antenna is broken, cracked, dented, etc. then it must be replaced.
- If the attachment is not secure, re-work the installation and complete electrical bonding test based on installation requirements.
- In the event the antenna seal shows sign of damage or decomposition, re-seal and complete the Electrical bonding test to installation requirements.

4.3.2 COAX CABLE MAINTENANCE

CAUTION

After any maintenance or modification is made to the GTS 820 TAS cables such as replacing a connector or entire cable, some important considerations must be made.

When making any repairs to GTS coax cables installed under this STC, be sure to adhere to all of the specifications and limitations such as minimum and maximum cable attenuation, attenuation balance between cables, phase matching etc. in the Installation Manuals referenced in Table 1.1

4.3.3 ELECTRICAL BONDING TEST

The following bonding tests are provided for GTS 820 equipped G58 aircraft as a requirement beyond what is given in the aircraft maintenance manual.

NOTE

It is recommended that these tests be conducted after visual inspections of each zone to minimize access requirements

4.3.3.1 Requirements

All GTS equipment must be installed. Gain access for the procedure listed below as required and in accordance with the Baron G58 Maintenance Manual.

4.3.3.2 Test Equipment

A milli-ohm meter and Kelvin probes are recommended for this test. However, a standard voltmeter, power supply with adjustable current limit, and ammeter may be substituted. The following procedure is written using the voltmeter, power supply and ammeter. All test equipment must have valid calibration records.

4.3.3.3 Electrical Bonding Procedure

Test Preparation:

All electrical connectors including coaxial cable connectors must be disconnected during bonding checks.

1. Connect the positive lead of the power supply to a nearby exposed portion of aircraft metallic structure, such as a frame, as close as possible to the unit under test. Do not use the units own installation rack. Connect/touch the positive lead of the voltmeter to the same point.

NOTE

Ensure that the voltmeter and power supply probes do not touch so as not to induce contact resistance.

2. Touch negative lead of power supply to each of the test points listed while performing Step 3. At each point, configure the power supply to produce 1 amp before measuring voltage. (Use an ammeter to ensure current is within 1 amp ±100 milli-amp at each point).

3. Set the voltmeter to measure milli-volts and null the reading. Measure the voltage from ground point (step 1) to each of the following points and record the voltage. (Perform Step 2 at each point to ensure that 1 amp ±100 milli-amp is present before measuring.)

Cabin Compartment

- Metal case of GPA 65 LNA/PA: _____ milli-volts (part of GTS 820 option)

Empennage

- Metal case of GTS 820: _____ milli-volts (optional equipment)

Aircraft Exterior (Antennas)

- GA 58 Top traffic antenna mounting screw: _____ milli-volts (optional equipment)
- GA 58 Bottom traffic antenna mounting screw: _____ milli-volts (optional equipment)

Ensure that at each test point, no more than 10 milli-volts (10 mΩ) are present. In this case, voltage is equivalent to resistance (Ω), given that precisely 1 amp reference current is present.

TIP: If 1 amp reference current cannot be maintained, note the difference between the attainable current and 1 amp reference current. Calculate the percentage difference and apply this to the voltage reading to obtain the equivalent resistance. Example: If the measured current is 1.2 amps, (20% high from the target 1 amp current), then the allowable voltage measurement would be 20% high, 2.5 milli-volts would now be 3.0 milli-volts.

If one or more bonding checks fails, i.e. the resistance is higher than those listed above, then clean and rebond as necessary. Re-attach equipment racks/appliance/antenna and complete electrical bonding test based on the original installation requirements. Refer to the applicable installation drawing referenced in Table 1.1 for the bonding requirements.

After bonding checks are complete, ensure all electrical and coaxial cable connectors are reconnected and all systems are working properly.

5 TROUBLESHOOTING

This section provides instructions and guidance for system troubleshooting additional systems / functions added by this STC. For troubleshooting assistance for all other aspects of the G1000 / GFC 700 refer to the existing Hawker Beechcraft G58 maintenance supplement listed in Table 1.1.

IMPORTANT

Sections 6, 3.7, and 8 provide detailed instructions on equipment removal, replacement, configuration, and return-to-service testing. Anytime a G1000 component or LRU is removed, swapped, or replaced, the technician must follow the procedures given in Sections 3.7, and 8 to ensure proper operation of the system.

5.1 SVS/PATHWAYS TROUBLESHOOTING

The SVS/Pathways software feature requires the following G1000 sensors/data to be valid:

- AHRS
- Heading
- GPS Position
- 9 Arc-Second Terrain Data

In the event that one the above items fails or is unavailable, the SVS/Pathways feature is automatically removed from the PFD. The following table describes possible symptoms associated with the SVS/Pathways feature, and provides corresponding actions for troubleshooting:

Table 5.1 – SVS Troubleshooting

Symptom	Recommended Action
"SYN VIS" softkey does not appear on PFD softkey tier.	Verify that the PFD and MFD software versions are shown to be 11.01 or later by checking the AUX – System Status Page on the MFD. If version 11.01 or later software is installed in the MFD and PFDs, follow the steps in Section 3.10.1 to reactivate the SVS/Pathways feature.
3D terrain presentation does not appear on PFD.	Verify that P/N 010-00330-43 terrain datacards are installed in the lower slot of the PFD and MFD. Verify that no alert messages are shown in the PFD Alerts Window. Verify that the G1000 AHRS, and heading data are valid on the PFD. Verify that a valid GPS 3D position solution is being received. Troubleshoot these systems in accordance with the existing Piper PA-46-500TP Airplane Maintenance Manual as referenced in Table 1-1. If a terrain database update has just been performed, allow the system time to initialize and verify the data. When the databases have been verified, the current database cycle and version are reported on the MFD AUX – System Status page.

The following table provides SVS/Pathways specific alert messages which may appear in the Alerts Window on the PFD (press the ALERTS softkey on the PFD to view the Alerts Window):

Table 5.2 – SVS Alert Messages

Failure Message	Cause	Solution
SVS – SVS DISABLED: Out of available terrain region.	SVS is disabled because the aircraft exceeded the boundaries of the loaded terrain database.	Geographical operation limitations are defined in the SVS/Pathways AFMS, which is referenced in Table 1.1. Ensure that operations are within this geographic area.
SVS – SVS DISABLED: Terrain DB resolution too low	SVS is disabled because a 9 Arc-Second or better database is not currently loaded.	Ensure the P/N 010-00330-43 Terrain Cards are installed in the lower slot of each display. If terrain data has been recently updated, ensure that the correct 9 Arc-Second databases were used.

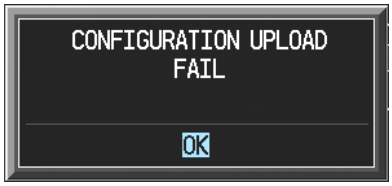
5.2 GTS 820 TROUBLESHOOTING

Problem	Cause	Solution
Unit does not power up – Data failed message	Improper wiring; circuit breaker open	Ensure power is properly wired to the GTS 820 and the circuit breaker is closed
	Improper configuration	Verify using the USB install tool that the GTS 820 is configured correctly for the desired display
GTS 8XX Install Tool won't display any pages	Improper wiring; circuit breaker open	Ensure USB is properly wired to the GTS 820 and the circuit breaker is closed
No Audio alerts	Improper wiring; Volume not set correctly	Ensure the audio is properly wired from the GTS 820 and volume is not set too low
Calibration Fault	Factory calibration invalid	If the unit fails to go into operate mode then return to Garmin for service
Configuration Fault	Both internal and external configuration checks failed	Verify the configuration via the GTS 8XX Install Tool.
		Verify wiring to the configuration module and replace if necessary.
FPGA Fault	Internal Fault	Return to Garmin for service
ROM Fault	Internal Fault	Return to Garmin for service
Execution Fault	Internal Fault	Return to Garmin for service

Problem	Cause	Solution
Electrical Fault	Internal Fault	Return to Garmin for service
Whisper Shout Fault	Internal Fault	Return to Garmin for service
Transmit Power Fault	Internal voltages are out of tolerance	Verify input voltage and if it continues return to Garmin for service.
1030 MHz Fault	Internal Fault	Return to Garmin for service
1090 MHz Fault	Internal Fault	Return to Garmin for service
PA/LNA Fault	Antenna connections or internal fault	Ensure all antenna connections are correct otherwise return to Garmin for Service
Receiver Fault	Antenna connections or internal fault	Ensure all antenna connections are correct otherwise return to Garmin for Service
Transmitter Fault	Antenna connections or internal fault	Ensure all antenna connections are correct otherwise return to Garmin for Service
Baro Altitude Fault	Baro Altimeter is not powered on or improper wiring.	Verify that the baro altimeter has power and is properly wired.
	Improper configuration settings	Verify the configuration is set correctly using the GTS 8XX Install Tool.
Red 'X' on a data port on the configuration page	Improper wiring; wrong port or speed selected	Ensure the port is properly wired to the GTS 820 and the correct settings are selected on the configuration page.

5.3 SOFTWARE/CONFIGURATION TROUBLESHOOTING

Problem	Solutions
Software file load fails: 	• Ensure that criteria listed in Section 5.4 are fulfilled for the applicable situation. • Ensure that LRU is reporting data on System Status page (LRU is 'ONLINE'). Check data path wiring as needed. • Retry software file load or try using a different card. Ensure that the MFD is not touched during the loading process. • Ensure that LRU part number is compatible with software version and Card Loader. Refer to the General Arrangement Drawing and to Section 3.6 of this document. • Replace LRU.
Configuration file load fails:	• Ensure that the criteria listed in Section 5.4 are fulfilled for the applicable situation.

	• Ensure that LRU is reporting data on System Status page (LRU is 'ONLINE'). Check data path wiring as needed. • Retry configuration file load or try using a different card. Ensure that the MFD is not touched during the loading process. • Ensure that LRU part number is compatible with Card Loader. Refer to the General Arrangement Drawing 005-00606-12 and to Section 3.6 of this document. • Replace LRU.
Software File Mismatch Alert appears in lower right corner of PFD when started in normal mode: 	• Ensure that proper software file part number and version were loaded to LRU. Refer to the General Arrangement Drawing 005-00606-12 and to Section 5.4. • Check and ensure that correct Card Loader was used during load process. Refer to the General Arrangement Drawing 005-00606-12. • Reload software to LRU.

5.4 GRT 10 / GRC 10 XM REMOTE CONTROL TROUBLESHOOTING

Problem	Action
GRT 10 not found	• Verify GRT 10 is receiving power. • Verify the RF pairing ID entered into GRC 10 is correct.
GRT 10 connection lost	• Verify that the GRC 10 is in RF range of the GRT 10. • Verify GRT 10 wiring and power.
GDL 69A not found	• Verify wiring between GDL 69A and GRT 10. • Verify GDL 69A is powered on.
GDL 69A connection is lost	• Verify wiring between GDL 69A and GRT 10. • Verify GDL 69A is powered on.
GRC 10 will not power on.	• Verify batteries are installed. • Install fresh batteries. See Section 7.3.

5.5 SYSTEM COMMUNICATION HIERARCHY

The following criteria must be satisfied to be able to perform the desired operation:

Desired Operation	Criteria for Success
Load Software to MFD or PFD Displays	• SW Loader Card must be inserted in top slot for each display to be loaded. • CLR & ENT keys must be held during power up of display. • Power on only one display at a time during software loading.

Load AIRFRAME, SYSTEM, MFD, PFD and MANIFEST configuration files to MFD and PFD	• SW Loader Card must be inserted in top slot of PFD. • PFD and MFD must be powered on. • PFD and MFD must have correct software.
Load Software/Configuration files to GIA 63Ws	• SW Loader Card must be inserted in top slot of PFD. • G1000 system must be powered on. • PFD and MFD must have correct software. • PFD and MFD must be successfully configured with AIRFRAME, SYSTEM, MANIFEST, MFD, and PFD configuration files.
Load Software/Configuration files to: GMA 1347 GDC 74A GEA 71 GRS 77 (software only) GMU 44 (software only) GTX 33 GDL 69A	• SW Loader Card must be inserted into PFD top slot. • G1000 must be powered on. • PFD and MFD must have correct software and configuration settings. • GIA 63Ws must have correct software. • GIA 63Ws must be successfully configured with GIA1 and GIA2 configuration files. • Data path from GIA1 to each LRU must be operational.
GTS 820 GWX 68	• SW Loader Card must be inserted into PFD top slot. • G1000 must be powered on. • PFD and MFD must have correct software and configuration settings. • GIA 63Ws must have correct software. • GIA 63Ws must be successfully configured with GIA1 and GIA2 configuration files. • Data path from MFD to GDL 69A must be operational.

5.6 BACKSHELL/BACKPLATE CONNECTORS

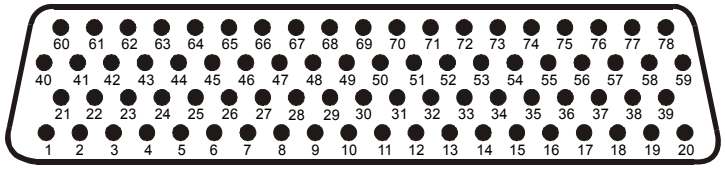


Figure 5.1 - GTS 820 Mating Connector (Rear View)

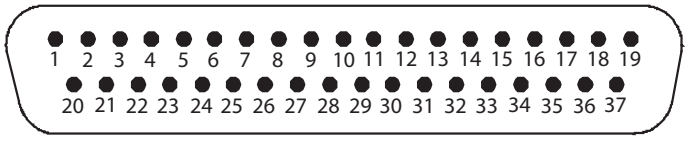


Figure 5.2 - GTS 820 Mating Connector

(Rear View)

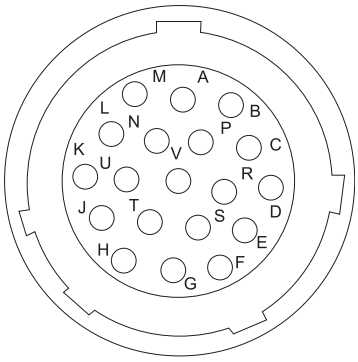


Figure 5.3 - GPA 65 Connector
(Rear View)

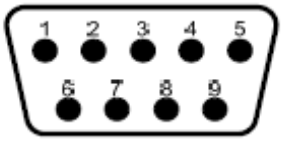


Figure 5.4 - GRT 10 Mating Connector
(Rear View)

6 EQUIPMENT REMOVAL & INSTALLATION

This section describes how to remove and replace equipment in the G58 that was installed as part of this STC. After removal and replacement, LRUs must be configured and tested as described in Section 7. For removal and replacement instructions for all other G1000 / GFC 700 equipment, refer to existing Hawker Beechcraft G58 Maintenance Supplement listed in Table 1.1.

CAUTION

When removing and/or replacing any G1000 component, always ensure that aircraft power is off. Unplug any auxiliary power supplies. Unplug the aircraft battery. Before performing maintenance, it is required that the technician verify the LRU software part number and version number matches the software configuration listed in the General Arrangement Drawing 005-00606-12, listed in Table 1.1.

To check an LRU software part number and/or version, follow the procedure defined in Section 3.7.

If a faulty LRU is not reporting its software version and part number, check aircraft maintenance logs for last software version loaded and verify against the General Arrangement Drawing 005-00606-12. The Software Manifest page may also be used to check part numbers and versions.

6.1 GTS 820 TAS PROCESSOR

CAUTION

After any maintenance or modification is made to the GTS 820 TAS cables such as replacing a connector or entire cable, some important considerations must be made.

Be sure to adhere to all of the specifications and limitations such as minimum and maximum cable attenuation, attenuation balance between cables, phase matching etc. in the Installation Manual referenced in Table 1.2.

Removal:

1. Gain access to the tail section.
2. Disconnect the eight coax “quick-lock” connectors.
3. Disconnect the three electrical connectors.
4. Unlock the unit from the rack by loosening the ratcheting latch mechanism.
5. Remove the unit from the rack.

Reinstallation:

1. Inspect the connectors for damaged pins.
2. Insert the unit into the installation rack.
3. Lock the unit into the rack by using the ratcheting latch mechanism.
4. Reconnect the eight coax “quick-lock” connectors and the three electrical connectors.
5. Configure and test the GTS 820 according to 7.1.

6.2 GPA 65 LNA/PA

CAUTION

After any maintenance or modification is made to the GTS 820 TAS cables such as replacing a connector or entire cable, some important considerations must be made.

Be sure to adhere to all of the specifications and limitations such as minimum and maximum cable attenuation, attenuation balance between cables, phase matching etc. in the Installation Manual referenced in Table 1.2.

Removal:

1. Remove cabin interior to access FS 124.75 at BL 0.00 on the right side of the fuselage. Refer to the "GTS 820 Equipment Install, Hawker Beechcraft G58" drawing listed in Table 1.1.
2. Disconnect the eight coax "quick-lock" connectors.
3. Disconnect the electrical connector.
4. Remove the four mounting bolts that hold the unit to the installation bracket.

Reinstallation:

1. Inspect the connectors for damaged pins.
2. Reattach the unit to the mounting bracket reusing exiting hardward.
3. Connect the eight coax connectors. Note the color coded bands which match the mating connectors on the unit.
4. Reconnect the electrical connector pigtail.
5. Ensure that all connectors (coax and electrical) are locked in place.
6. No configuration is required for the GPA 65. Test the GTS 820 according to 7.1.

6.3 TAS ANTENNAS

CAUTION

After any maintenance or modification is made to the GTS 820 TAS cables such as replacing a connector or entire cable, some important considerations must be made.

Be sure to adhere to all of the specifications and limitations such as minimum and maximum cable attenuation, attenuation balance between cables, phase matching etc. in the Installation Manual referenced in Table 1.2.

1. Remove and install the TAS/TCAS antennas in accordance with the "GTS 820 Equipment Install, Hawker Beechcraft G58" drawing GPN: 005-00606-15.
2. Procede to 7.1 for testing of the GTX 820 TAS.

6.4 GRT 10 XM REMOTE CONTROL TRANSCEIVER

Removal:

1. Gain access to GRT 10 under glareshield on copilot side of cockpit. Refer to the "GRT 10 Equipment Install, Hawker Beechcraft G58" drawing listed in Table 1.1.
2. Disconnect the electrical connector.
3. Remove the three mounting screws that hold the unit to the installation bracket.

Reinstallation:

1. Inspect the connector for damaged pins.
2. Reattach the unit to the mounting bracket reusing exiting hardware.
3. Reconnect the electrical connector and ensure it is locked in place. If GRT or GRC is replaced, system must be reconfigured in accordance with instructions in Section 3.7.4.

6.4.1 GRC 10 REMOTE CONTROL BATTERY REPLACEMENT

If the unit does not turn on, or the battery level indicator on the display shows no bars, replace the batteries. To replace the batteries in the GRC 10 Remote Control, remove the back cover of the remote. Insert two fresh AA batteries with the orientation as shown in the diagram in the battery compartment. Both batteries should be replaced with fresh batteries at the same time.

Figure 6.1 - Battery Compartment

WARNING

Do not use lithium batteries in the GRC 10.

NOTE

Remove batteries when the GRC 10 is stored for extended periods.

CAUTION

When replacing batteries, use only new or fully charged batteries. Do not mix new and old batteries as this can cause battery leakage and damage to the unit. Do not mix battery types (i.e. rechargeable with non-rechargeable).

CAUTION

Remove batteries if the GRC 10 will not be in use for several months. Storing batteries in the unit for prolonged periods may result in leakage and damage to the battery compartment.

NOTE

Failure of the GRC 10 (i.e. dead batteries) has no impact on normal aircraft operations and is only used for passengers to control audio entertainment.

NOTE

It is not necessary to reconfigure GRC 10 after battery replacement.

6.5 GDU REMOVAL & REPLACEMENT

Removal:

1. Make sure all airplane electrical power is disconnected.
2. Using a $^{3}/_{32}$ hex tool, turn all four $^{1}/_{4}$-turn fasteners, on the display unit, counter-clockwise until they reach their stops.

NOTE

The display unit harness is protected by a flexible chain link conduit that protects the harness and eases the retraction of the harness back into the rack when installing the display unit.

3. While supporting the display unit, carefully pull the unit aft to access the single harness connector.

Reinstallation:

1. Remove the protective caps from the display unit and harness connectors. Visually inspect the display unit harness connector for damage. Repair any damage.
2. While supporting the display unit, connect the harness connector to the rear of the display unit.

NOTE

The display unit harness is protected by a flexible chain link conduit that protects the harness and eases the retraction of the harness back into the rack when installing the display unit.

3. Carefully insert the display unit into the panel cutout. Make sure all four $^{1}/_{4}$-turn fasteners align with the corresponding panel holes.
4. Seat the display unit in the panel cutout. Do not use excessive force.
5. Once the display unit is seated, turn all four $^{1}/_{4}$-turn fasteners clockwise to lock the display unit to the instrument panel.
6. If display is new, perform software loading and configuration of display in accordance with the steps beginning in Section 3.7.1.
7. If display is existing, proceed to Section 8.1 for display checkout.

6.6 GMU 44 REMOVAL & REPLACEMENT

Removal:

1. Make sure all airplane electrical power is disconnected.

2. **For airplanes with long range fuel tanks** -Remove the left wing tip by unscrewing the phillips screws. **For airplanes with standard fuel tanks** - Remove the square access panel (left wing top).

3. Unscrew the three screws that hold the GMU 44 to its mounting rack.

4. Carefully lift the GMU 44 from its mounting rack.

5. Disconnect the airplane harness connector from the GMU 44 electrical connector.

6. Place protective caps on the GMU 44 connector and on the harness connector.

7. Remove the unit from the airplane.

Reinstallation:

1. Remove the protective caps from the GMU 44 electrical connector and its associated airplane harness connector. Visually inspect the electrical connectors to make sure there are no bent or damaged pins. Repair any damage.

2. Connect the airplane harness connector to the GMU 44 electrical connector.

3. Lower the GMU 44 into the locator pins on the mounting rack. Make sure the GMU 44 direction arrow aligns with the mounting rack direction arrow.

CAUTION

It is recommended that new screws are used to secure the GMU 44 to the mounting rack. If the original screws must be re-used, coat the screw threads with Loctite 242 (blue) thread locking compound to restore their anti-rotational properties.

Securing screws **MUST** be non-magnetic.

4. Secure the GMU 44 to the mounting rack with three phillips screws.

5. Make sure the location of the electrical connector and the routing of the associated electrical wire harness are as noted in the removal process.

6. Make sure all tools and equipment are removed from the area.

7. **For airplanes with long range fuel tanks** -Install the left wing tip. **For airplanes with standard fuel tanks** - Install the square access panel (left wing top).

8. Proceed to Section 8 for checkout.

6.7 GTX 33ES TRANSPONDER REMOVAL & REPLACEMENT

Removal:

1. Make sure all airplane electrical power is disconnected.
2. Remove the PFD.
3. Unlock the GTX 33 handle by loosening the Phillips screw on the handle.
4. Pull the handle upward to unlock the GTX 33. Gently remove the unit from the rack.
5. Place protective caps on the GTX 33 electrical connectors and rack connectors.
6. Remove the unit from the airplane.

Reinstallation:

1. Remove the protective caps from the GTX 33 electrical connectors and rack connectors. Visually inspect the electrical connectors to make sure there are no bent or damaged pins. Repair any damage.

NOTE

A handle-lock mechanism is used to guide and lock the LRU into place. The handle has a locking stud that engages a dogleg-shaped track on the LRU rack. After engaging the dogleg, the handle can be pushed down and locked. This action seats the LRU against the rear plate and connectors. A single Phillips screw is used to fasten the lever to the LRU body. Gently insert the GTX 33 into its rack. The handle should engage the dogleg track.

CAUTION

Some pressure is required to seat the LRU and lock the handle. The unit should be gently worked into position using the lever. Do not use excessive force inserting the LRU. If the LRU binds or is caught, stop and remove it. Check and make sure the rear plate and connectors are floating freely in the LRU rack before attempting to re-install.

2. Push down on the GTX 33 handle to lock the unit into the rack.
3. Lock the handle to the GTX 33 body using the Phillips screw.
4. Reinstall the PFD.
5. Proceed to Section 7.1 for GTX 33 testing.

6.8 GIA 63W REMOVAL & REPLACEMENT

Removal:

1. Make sure all airplane electrical power is disconnected.
2. Remove the MFD.
3. Unlock the GIA 63W handle by loosening the Phillips screw on the handle.
4. Pull the handle upward to unlock the GIA 63W. Gently remove the unit from the rack.
5. Place protective caps on the GIA 63W electrical connectors and rack connectors.
6. Remove the unit from the airplane.

Reinstallation:

1. Remove the protective caps from the GIA 63W electrical connectors and rack connectors. Visually inspect the electrical connectors to make sure there are no bent or damaged pins. Repair any damage.

NOTE

A handle-lock mechanism is used to guide and lock the LRU into place. The handle has a locking stud that engages a dogleg-shaped track on the LRU rack. After engaging the dogleg, the handle can be pushed down and locked. This action seats the LRU against the rear plate and connectors. A single Phillips screw is used to fasten the lever to the LRU body. Gently insert the GIA 63W into its rack. The handle should engage the dogleg track.

CAUTION

Some pressure is required to seat the LRU and lock the handle. The unit should be gently worked into position using the lever. Do not use excessive force inserting the LRU. If the LRU binds or is caught, stop and remove it. Check and make sure the rear plate and connectors are floating freely in the LRU rack before attempting to re-install.

2. Push down on the GIA 63W handle to lock the unit into the rack.
3. Lock the handle to the GIA 63W body using the Phillips screw.
4. Reinstall the MFD.
5. No software or configuration loading is required if the removed GIA is reinstalled in it's original position (GIA1 and GIA2 in their original racks). This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Proceed to Section 8.

CAUTION

010-00725-08 Loader Card (006-B0857-08 Software Image) is only compatible with GIA P/N: 011-01105-01. All installations with GIA P/N: 011-01105-20 must use the 006-B0857-09 Software Image.

6. If a new, repaired, or exchange GIA is installed, the correct software and configuration files must be loaded to the unit. See Section 3.7 then continue to Section 8.

7. No software loading is required if the originally installed GIA units are re-installed in opposite positions (GIA1 and GIA2 in opposite unit racks). However, configuration loading is required. See Section 3.7, and then continue to the GIA 63W Test (Section 8).

7 G1000 EQUIPMENT CONFIGURATION & TESTING

Refer to Section 3.6 for information on loading software and configuration of G1000 equipment covered by this STC.

7.1 TRANSPONDER TESTING

The integrated transponder/altitude reporting system must be verified in accordance with Title 14 of the Code of Federal Regulations (14 CFR) §§ 91.411 and 91.413. These tests require the use of a Mode S ramp generator. Specific instructions for operating the ramp tester are contained in the applicable operator's manual. Refer to 14 CFR Part 43 Appendices E and F for testing criteria.

The transponder is tested while operating in the normal mode unless otherwise specified. Perform the following procedures using an appropriately rated transponder test set.

7.1.1 EXTENDED SQUITTER TEST

For those aircraft with extended squitter enabled, perform the following test procedures. The transponder is tested while operating in the normal mode unless otherwise specified. Perform the following procedures using an appropriately rated transponder test set.

a. On PFD, press the XPDR softkey and verify that ADS-B TX softkey is available. Select ADS-B TX (selection will be greyed out).

b. Using a transponder ramp tester, evaluate ADS-B. Using an appropriately rated ADTS, input an airspeed of 50 knots. Verify the following information is displayed on the test set:

- Squitter Type
- Altitude
- Altitude Source
- Squitter Period
- Latitude and Longitude
- Aircraft Type
- Squitter Period

7.2 GTS TRAFFIC SYSTEM

CAUTION

After any maintenance or modification is made to the GTS 820 TAS cables such as replacing a connector or entire cable, some important considerations must be made.

Be sure to adhere to all of the specifications and limitations such as minimum and maximum cable attenuation, attenuation balance between cables, phase matching etc. in the Installation Manual referenced in Table 1.2.

Original GTS 820 Reinstalled

No software or configuration loading is required if the removed GTS 820 is re-installed. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. Continue to the GTS 820 Test (Section 7.2.1).

New, Repaired or Exchange GTS 820 Installed

If a new, repaired or exchange GTS 820 is installed, the correct software and configuration files must be loaded to the unit. See Section 3.7 and then continue to the GTS 820 Test (Section 7.2.1).

7.2.1 GTS 820 TEST

NOTE

The GTS 8XX Traffic System must be calibrated using the GTS 8XX Install Tool, Garmin Part Number 006-A0242-00 prior to accomplishment of the functional check. Reference the GTS 8XX/GPA 65 Installation Manual, 190-00587-00 for instructions on the use of the GTS 8XX Install Tool for calibration and accomplishment of the functional check.

The following test will be performed using an appropriate laptop computer with GTS 8XX Install Tool GPN 006-A0242-00 installed, a USB-A to USB-B cable, and suitable ramp tester such as a TIC TR220 or equivalent.

To select a scenario that will properly converge and intercept the GTS 8XX, the GTS 8XX must be in ground test mode. Activate ground test mode by enabling the Ground Test field on the Normal tab of the GTS 8XX Install Tool. To enable ground test mode, the aircraft must be on the ground and the GTS 8XX must be in normal system mode and in standby.

NOTE

Using the GTS 8XX Install Tool, Garmin Part Number 006-A0242-00, place the Ground Sense, and Squat Switch Sense to OPEN, under the CONFIGURATION tab prior to accomplishment of the functional check. Reference the GTS 8XX/GPA 65 Installation Manual, 190-00587-00 for instructions on the use of the GTS 8XX Install Tool.

a. Position the test set directional antenna with a clear line of sight to the GTS 820 antenna at 90 degrees. With the GTS 820 powered up and in Standby mode indicated on the MFD, cycle the GTS 820 to ‘Operate’.

b. On the test set, select the following:

- Set the intruder type as ATCRBS.
- Intruder Start Distance: 10 nm.
- Intruder Start Altitude: 50,000 ft.
- Vertical Speed: 0 fpm.
- Velocity: 360 kts.

c. Initiate the intruder scenario and observe the following:

- Traffic should be acquired at approximately 10 NM at 90 degree bearing and co-altitude. Observe intruder closes on own aircraft at a rate of 0.1 NM/sec.

- The intruder should transition from Other Traffic (displayed as an open diamond with 00 displayed above), to proximate traffic (displayed as a filled white diamond with 00 displayed above), to a Traffic Advisory (TA) alarm.
- The appropriate TA symbology (yellow filled circle with 00 displayed above and an audio annunciation of “Traffic! 3 O’clock! At Altitude! 3 Miles!”), displayed when the intruder approaches within 3 NM.

Antenna Bearing Check

a. Position the test set directional antenna with a clear line of sight to the GTS820 antenna.

b. Ensure that the transmitter or receiver (RX/TX) that you are testing is significantly closer to the ramp tester than another operating RX/TX, or erroneous and inaccurate results may occur. All four quadrants (forward, starboard, aft, and port) will be similarly tested to verify bearing of simulated intruder supplied via the ramp tester are correctly displayed on the MAP-TRAFFIC MAP page of the MFD.

c. Using the ramp tester, select the proper antenna gain and distance to aircraft.

d. Position ramp test set at 0 degrees.

e. Turn the test set on.

f. Connect the directional antenna to the ramp test set.

g. Set the multifunction test set to perform “TCAS” testing. Configure the GTS 8XX to the normal operating mode.

h. Program a stationary intruder per the following scenario:

NOTE

If using the TIC TR 220 test set, a stationary intruder is programmed by not starting the scenario as programmed.

- Intruder Start Distance: 2 nm.
- Intruder Start Altitude: 50,000 ft.

i. Set the intruder type as ATCRBS.

j. Verify a target is annunciated on the MAP-TRAFFIC MAP page of the MFD at the correct bearing of approximately 0 degree azimuth at 2 NM and co-altitude (read as 00 above a filled diamond indicating proximate traffic).

k. Toggle intruder traffic to standby or off.

l. Reposition ramp test set and directional antenna to a starboard position of 90 degrees.

m. Reengage the same intruder scenario as above.

n. Verify a target is annunciated on the MAP-TRAFFIC MAP page of the MFD at the correct bearing of approximately 90 degree azimuth at 2 NM and co-altitude.

o. Toggle intruder traffic to standby or off.

p. Reposition ramp test set and directional antenna to an aft position of 180 degrees.

q. Reengage the same intruder scenario as above.

r. Verify a target is annunciated on the MAP-TRAFFIC MAP page of the MFD at the correct bearing of approximately 180 degree azimuth at 2 NM and co-altitude.

s. Toggle intruder traffic to standby or off.

t. Reposition ramp test set and directional antenna to a port position of 270 degrees.

u. Reengage the same intruder scenario as above.

v. Verify a target is annunciated on the MAP-TRAFFIC MAP page of the MFD at the correct bearing of approximately 270 degree azimuth at 2 NM and co-altitude.

w. Toggle intruder traffic to standby or off.

x. If the bearing is not as anticipated, or multiple targets are displayed during tests, recheck the antenna coaxial connections by verifying the following:

- QMA connectors are 'snapped' firmly in place
- Connections are made to the proper channels and color-coded heat shrink is the same color on both ends of cable
- QMA connectors are correctly installed on cables
- Correct antenna type is selected in the configuration

8 SYSTEM RETURN TO SERVICE PROCEDURE

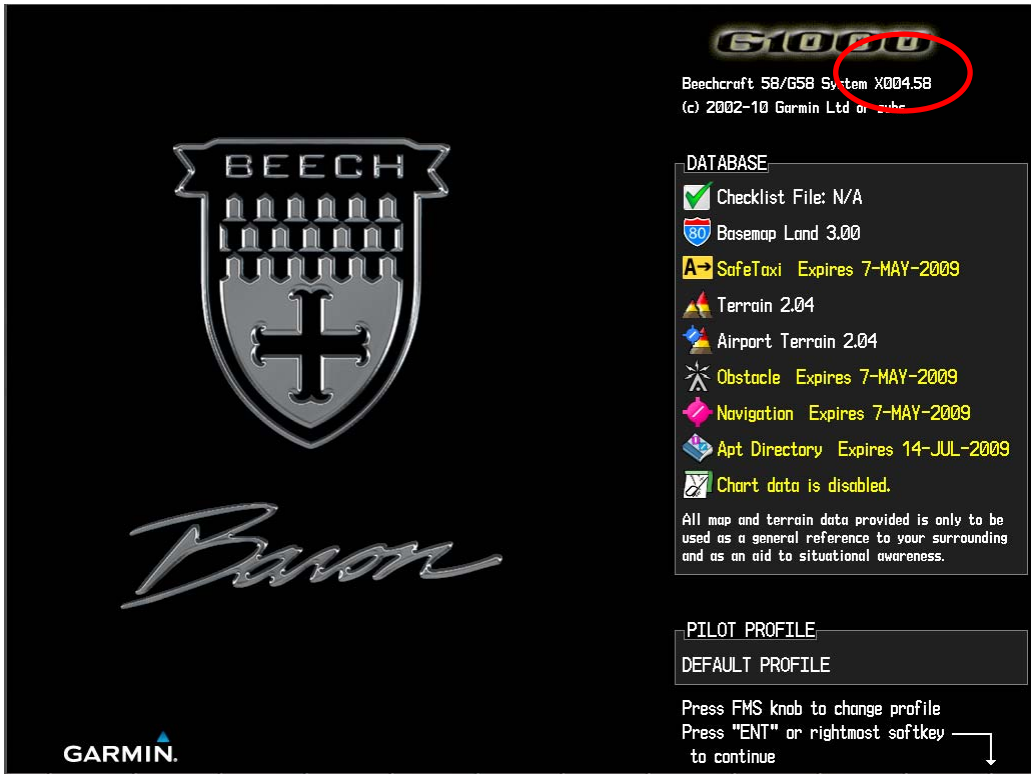
The procedures contained in this section describe the minimum return to service checks that should be performed upon reinstallation of the software and/or reactivation of SVS/Pathways. If the software reload or SVS reactivation was as a result of an LRU replacement, the technician must also perform any additional return to service tests required by the existing Hawker Beechcraft G58 Airplane Maintenance Manual (listed in Table 1.1) for that LRU.

8.1 DISPLAY TESTING

The G1000 system is tested while operating in the normal mode unless otherwise specified. If the system is in configuration mode, restart the displays by cycling the PFD and MFD circuit breakers to start the display in the normal mode.

a. Apply aircraft power. Observe the MFD power-up screen. Verify the display is formatted as shown below. Figure 8.1 is a format reference, the illustration on the left may vary. Note database versions and system software represented in the upper right corner. Refer to General Arrangement Drawing 005-00606-12 drawing for the correct database and system software versions.

Figure 8.1 – MFD Initial Power Up page (format reference)

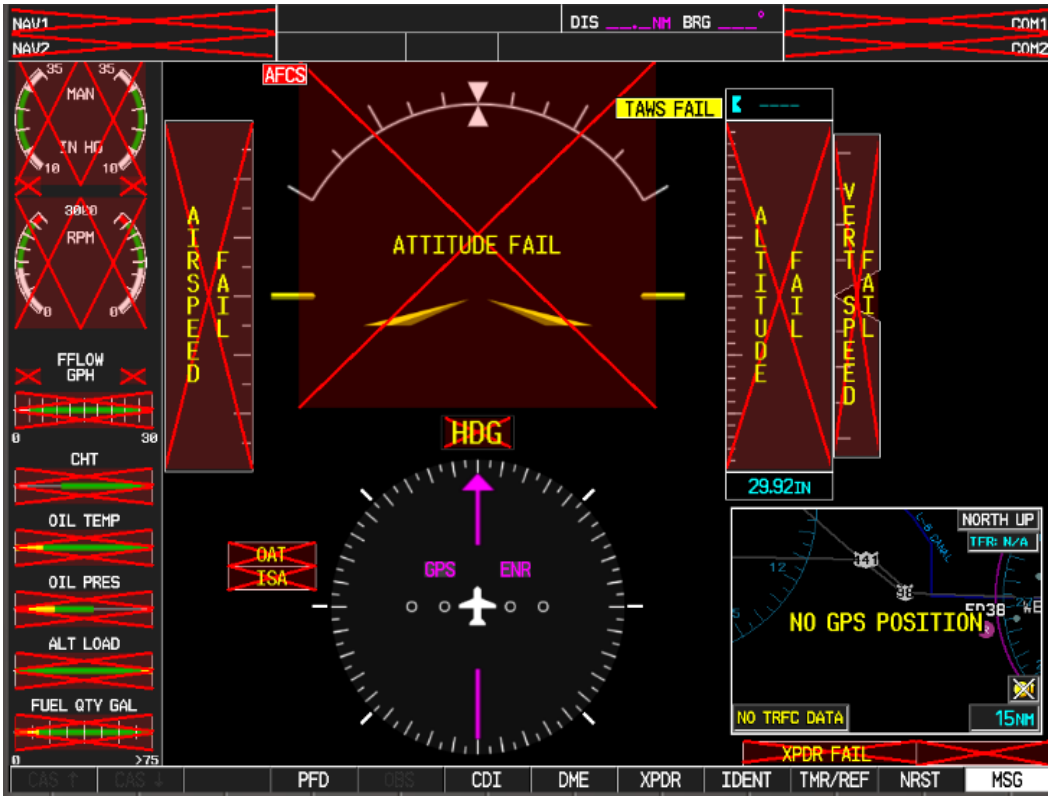

G1000
Beechcraft 58/G58 System X004.58
(c) 2002-10 Garmin Ltd or subs
BEECH
Baron
DATABASE
Checklist File: N/A
Basemap Land 3.00
SafeTaxi Expires 7-MAY-2009
Terrain 2.04
Airport Terrain 2.04
Obstacle Expires 7-MAY-2009
Navigation Expires 7-MAY-2009
Apt Directory Expires 14-JUL-2009
Chart data is disabled.
All map and terrain data provided is only to be used as a general reference to your surrounding and as an aid to situational awareness.
PILOT PROFILE
DEFAULT PROFILE
Press FMS knob to change profile
Press "ENT" or rightmost softkey to continue
GARMIN.

b. The System number reflected in the upper right hand corner is the System Software Version. It correlates to the G1000 SW Loader Card used to load the software to the system.

c. Verify that the System Software Version is correct per General Arrangement Drawing 005-00606-12.

d. Press the ENT key to acknowledge the correct pilot profile on the MFD.

Figure 8.2 – PFD Power Up System Annunciations



e. In the normal operating mode, data fields that are invalid have large red Xs through them (Figure 8.2). A valid field does not display a red X (Figure 8.3). Allow the displays to initialize for approximately one minute.

Figure 8.3 – Normal Display (without SVS enabled)

Figure 8.4 – Normal Display (with SVS enabled)

f. Check that all COM/NAV fields are valid in the top corners of PFD and MFD.

g. Check that altitude, airspeed, vertical speed, TAS, OAT, and ISA fields are valid on PFD and MFD.

h. Check that engine instrument fields are valid on the MFD.

i. Verify that no MANIFEST alert messages appear in the lower right corner (press the flashing ALERTS softkey to view alert messages). If any MANIFEST errors appear, the correct software to the related LRU must be loaded before proceeding (refer to Section 3.7).

j. Verify no other alert messages are displayed. If any alert messages are displayed, resolve prior to proceeding.

8.1.1 SVS / PATHWAYS INSTALLATION VERIFICATION (REQUIRED IF ENABLED)

a. Apply power to the G1000 system. Allow the AHRS and magnetometer systems to stabilize and align. Verify that air data information becomes valid on the PFD. Check the MFD AUX – System Status page to verify GPS signals acquisition.

b. Press the ALERTS softkey on the PFD and verify no database, manifest, or configuration errors exist.

c. Press the PFD softkey. Verify a SYN VIS softkey is shown in the lower left corner of the display.

d. Press the SYN VIS softkey, then press the SYN TERR softkey to activate the Synthetic Vision terrain display feature. Verify that the traditional blue/brown attitude depiction is replaced with the Synthetic Vision rendering within 2-3 minutes of activation. See figures below for reference.

e. Press the PFD softkey. Press the SYN VIS softkey and verify the following softkeys are present and selectable:

- PATHWAY
- HRZN HDG
- APT SIGNS

Figure 8.5 – PFD Display without SVS enabled

Figure 8.6 – PFD with SVS enabled

NOTE

Screenshots are for reference only and may not be indicative of what is present on the actual aircraft display.

f. Installation is complete. Be sure to keep the SVS / Pathways enable card with the aircraft for future use.

8.2 GIA 63W INTEGRATED AVIONICS UNIT

GPS Signal Acquisition

Figure 8-7 AUX – GPS STATUS Page (MFD)

The GIA 63W units should normally acquire a GPS navigation solution within 5 to 10 minutes of startup, provided the aircraft is outside (or indoors with a GPS repeater). Select the GPS STATUS page on the MFD (4th page in AUX group). Two softkeys on the bottom of the display allow the user to toggle between GPS 1 and GPS 2. Verify that both receivers show 3D DIFF NAV on the MFD.

Continue to the VHF COM Interference test.

NOTE

It may be necessary to temporarily disable or move away from GPS repeaters while testing, as repeaters may adversely affect GPS receiver performance.

VHF COM Interference Test

This test must be conducted outside. Use of a GPS repeater inside a hangar may result in a failed test. This procedure assumes that the system is currently set to 25 kHz COM channel spacing. Once the signal acquisition test has been completed successfully, perform the following steps:

a. On the MFD, monitor GPS signal strength bars on the AUX – GPS STATUS page.

b. On the PFD, ensure that the CDI is set to GPS. If it is not, press the 'CDI' softkey until GPS ENR is displayed.

c. Verify that the GPS "INTEG" flag is out of view.

d. Select 121.150 MHz on the No. 1 COM transceiver.

e. Transmit for a period of 35 seconds while monitoring GPS 1 signal strength levels.

f. During the transmit period, verify that the GPS “INTEG” flag does not come into view on the PFD and verify that GPS 1 does not lose a 3-D navigation solution on the MFD.

g. Repeat steps e and f and re-transmit while monitoring GPS 2 signal levels on the MFD.

h. Repeat steps d through g for each of the following frequencies:

- 121.175 MHz
- 121.200 MHz
- 131.250 MHz
- 131.275 MHz
- 131.300 MHz

i. Repeat steps d through h for the No. 2 COM transceiver (GIA2).

j. On the MFD, select the AUX – SYSTEM SETUP page.

k. Under the COM CONFIG field, change the COM channel spacing from 25 kHz to 8.33 kHz.

l. Go back to the AUX – GPS STATUS page.

m. Select 121.185 MHz on the No. 1 COM transceiver.

n. Transmit for a period of 35 seconds while monitoring GPS 1 signal strength levels.

o. During the transmit period, verify that the GPS “INTEG” flag does not come into view on the PFD and verify that GPS 1 does not lose a 3-D navigation solution on the MFD.

p. Repeat steps n and o and re-transmit while monitoring GPS 2 signal levels on the MFD.

q. Repeat steps n through p for each of the following frequencies:

- 121.190 MHz
- 130.285 MHz
- 131.290 Mhz

r. Repeat steps n through q for the No. 2 COM transceiver (GIA2).

s. On the MFD, select the AUX – SYSTEM SETUP page and change the COM channel spacing back to 25 kHz.

Continue to the VOR/LOC/GS Test.

VOR/LOC/GS Test

Check the VOR, ILS, and Glideslope functions with ramp test equipment. Operate the equipment according to the test equipment manufacturer's instructions. Adjust the RF signal to a level adequate to perform the test. Select the appropriate HSI source by using the CDI softkey.

NOTE

The PFD HSI does not show a course deviation bar unless a valid VHF NAV frequency is tuned.

GFC 700 VOR/LOC/GS Test

a. Simulate a VOR signal on radial 000° with a course-widht of 20°. Verify full-scale deflection of the CDI while applying a 10° deviation signal.

b. Exercise the CDI with both right and left deviations for both NAV1 and NAV2.

c. Exercise the Glideslope deviation indicator with up and down deviation indications.

8.3 GFC 700 AUTOPILOT GROUND CHECKS

The following procedure will verify the proper operation of the GFC 700 AFCS and are only required after conducting maintenance on either GIA 63W or any of the GSA 81 servo units. This procedure is designed to test the installation of the AFCS only after the G1000 testing in previous sections has been conducted. The technician performing these checks should be thoroughly familiar with the GFC 700 by studying the following:

Pilot's Guide for Beechcraft G58, Garmin P/N 190-00629-02 Revision A or later.

NOTE

Servo torque settings must be maintained in accordance with Hawker Beechcraft AMM Chapter 22-14-07.

CAUTION!

When the autopilot is engaged, flight control surface movement can occur.

8.3.1 AUTOPILOT PRE-FLIGHT TEST

NOTE

The autopilot pre-flight test will run on every full autopilot power-on.

a. Open the AP SERVOS circuit breaker and reset. The AFCS will re-initiate the pre-flight test.

NOTE

A red AFCS (AFCS) annunciation will be displayed until both GIAs, the AHRS, and the autopilot servos are online.

b. Verify that a white 'PFT' annunciation is displayed on the PFD, as shown in Figure 8.8.

Figure 8.8 - GFC 700 Pre-Flight Test

c. Upon successful completion of the pre-flight test, a normal AP disconnect tone will sound and the 'PFT' annunciation will clear. Continue to Section 8.3.2.

NOTE

If the 'PFT' annunciation turns red, the test has failed and additional troubleshooting will have to be performed prior to continuing with the test.

NOTE

If the aural alert is not heard, but pre-flight testing passed, engage the Autopilot by pressing the AP key and disengage the Autopilot by pressing the AP key again. Visual and aural disconnect alerting should occur. If no alert is heard, the audio interface between GIA No. 1 and the audio panel should be

checked. If an alert is heard, the audio interface between GIA No. 2 and the audio panel should be checked.

8.3.2 AFCS SWITCH CHECKS

To verify that the AFCS system buttons and switches are operating correctly, perform the following checks:

a. Actuate both halves of the Manual Electric Trim (MET) switch in the same direction. The trim clutch should engage and the trim wheel should run in the selected direction. Check operation in both directions.

b. Press the AP DISC button and hold while actuating the MET switch. The trim wheel should stop running.

c. Release the AP DISC button. The trim wheel should resume running.

d. Release the MET switch.

e. Engage the Autopilot by pressing the AP key on the MFD.

f. Press and hold the left half of the MET switch. The Autopilot should command a normal disengagement and the trim wheel should stop moving and rotate freely when moved manually. A disconnect tone will be heard and a flashing amber “AP” will be visible on the PFD.

g. Engage the Autopilot again by pressing the AP key on the MFD. The pitch and roll clutches should engage, resisting movement of the control wheel.

h. Press and hold the CWS switch. The control wheel should now move freely when moved manually.

i. Release the CWS switch. The Autopilot should hold the control wheel in its present attitude.

j. Press the AP DISC switch. The Autopilot should command a normal disengagement. A disconnect tone will be heard and a flashing amber “AP” will be visible on the PFD.

k. Verify that the control yoke is free in pitch and roll axes.

l. Engage the Autopilot again by pressing the ‘AP’ key on the MFD.

m. Pull the AP SERVOS circuit breaker. The Autopilot should command an abnormal disconnect, consisting of a continuous disconnect tone and flashing red ‘AP’ and amber ‘YD’ annunciation. No AFCS annunciations (e.g. AFCS, PFT, Mistrim) should remain on the PFD.

n. Reset the AP SERVOS breaker and then press the AP DISC switch to silence the autopilot abnormal disconnect tone.

o. Wait for the pre-flight test sequence to successfully complete again.

p. Press the GO AROUND button. ‘GA’ should be annunciated on the PFD for both pitch and roll modes and the command bars should indicate a wings-level climb to 7 degrees.

q. Press the FD key on the MFD to deactivate the Go Around mode and reset the Flight Director.

r. Center the trim wheel if it is not already centered.

s. Press the AP key to engage the Autopilot.

t. Press the CWS button and verify there is no residual force on the control wheel for the pitch axis.

u. Extend the flaps to approach position. The trim wheel should immediately run in the NOSE DOWN direction.

v. Retract the flaps. The trim should immediately run in the NOSE UP direction.

w. Disengage the Autopilot by pressing the AP DISC switch.

8.3.3 MANUAL ELECTRIC TRIM SPEED CHECK

a. Run Manual Electric Trim (MET) in one direction until it runs against the stop.

b. Using a stop watch or equivalent device, time the trim speed from one end of travel to the opposite stop. The elapsed time should measure 15 $\pm$ 5 seconds for each direction.

8.3.4 AUTOPILOT OPERATION CHECKS

a. Push the HDG knob in to synchronize the heading bug to the present aircraft heading on the HSI.

b. Engage the Autopilot by pressing the AP key on the MFD.

c. Select Heading mode by pressing the HDG key on the MFD. The command bars should be level and the control wheel should be stationary (very slow movement acceptable, due to the aircraft not being perfectly level).

d. Turn the HDG knob to the left and verify that the command bars move to the left and the control wheel turns to the left (counter-clockwise).

e. Turn the HDG knob to the right and verify that the command bars move to the right and the control wheel turns to the right (clockwise).

f. Push the CWS button and pull the control wheel to the middle of the pitch control range.

g. Release the CWS button. Verify that the Autopilot clutches re-engage and hold the wheel stationary.

h. Holding the control wheel lightly, press the NOSE UP key on the MFD twice, to increase the pitch reference. Verify that the command bars move up approximately one degree and the control wheel begins moving aft.

i. Hold the control wheel and press the CWS button, re-synchronizing the pitch reference and re-centering the control wheel.

j. Release the CWS button and verify that servo clutches re-engage before releasing the control wheel.

k. Press the NOSE DN key on the MFD twice. Verify that the command bars command down and the control wheel begins moving forward.

l. Hold the controls and press CWS to re-center the command bars and stop control wheel movement.

m. With the Autopilot still engaged and the CWS button pressed, move the control wheel to its aft limit.

n. Release the CWS button and apply continuous forward pressure, slowly moving the control wheel. After 1 or 2 seconds, the trim wheel should begin moving in a trim up direction.

o. Grip the control wheel and press the CWS button. Trim motion should stop.

p. Move the control wheel to the forward limit and release the CWS button.

q. Slowly pull back on the control wheel. After a similar delay, the trim wheel should begin to trim down.

r. Relieve pressure on the wheel and the trim motion should stop. Verify that the trim wheel is free to turn.

s. Hold the control wheel and press the AP DISC switch to disconnect the Autopilot.

t. Engage VS mode by pressing the VS key on the MFD. Verify the PFD display 'VS' in green and indicates a pitch reference of '0 FPM'.

u. Press the ALT key on the MFD and verify that the 'ALT' annunciation is displayed in green on the PFD with an altitude reference equal to the aircraft altitude (within the nearest 20 feet).

v. Press the FD key and verify that the mode annunciations and command bars are removed from the display.

NOTE

To fully verify the yaw damper function, it must be checked in flight.

w. Press the YD key and verify that the 'YD' annunciation is displayed in green on the PFD.

x. Press the rudder pedals and verify that the yaw servo is resisting movement of the rudder pedals.

y. Press the AP DISC button and verify that a flashing yellow 'YD' annunciation is displayed on the PFD.

z. Verify that the rudder pedals move freely.

8.4 MAINTENANCE RECORDS

After complying with the procedures contained in this ICA and any additional return to service procedures contained in the Hawker Beechcraft Maintenance Manual and G58 Maintenance Supplement, listed in Table 1.1, the aircraft may be returned to service.

Record the following information in appropriate aircraft maintenance logs:

- Part number of the G1000 software loader card used to perform software loading or software updates.
- Record part and serial numbers of any LRU which was replaced.
- Record any database updates which were performed during maintenance.
- Any other applicable information related to the maintenance work performed on the aircraft.